User's Guide

Version 1.0
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The Engineering Business Area Analysis Group (EBAAG), the sponsor's representative, has provided guidance in the conversion and upgrade of the DOS Missouri Pond program to the Visual Basic WinPond program. Members of the EBAAG group include the following:

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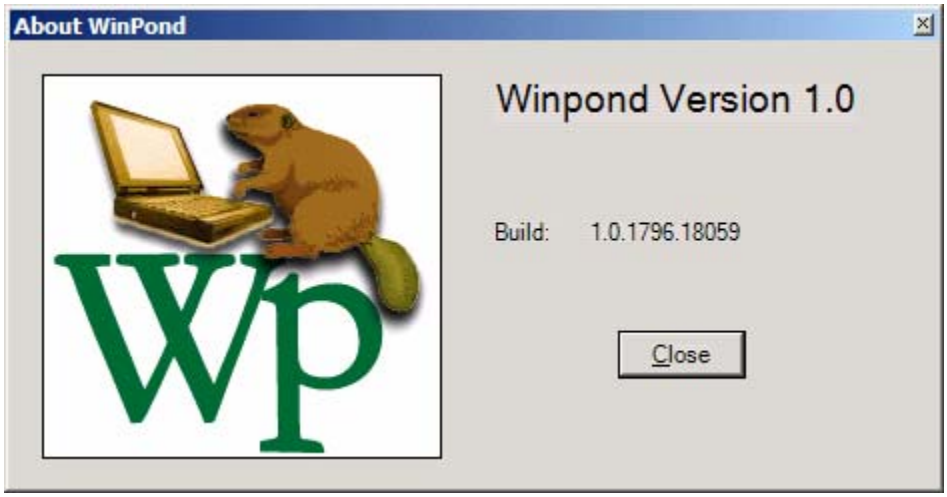
Introduction 12/27/2004

WinPond Version and Build

To locate the current WinPond Version and Build on the main WinPond Menu, click on Help and then click on About WinPond. The current version and Build will be displayed.

To be sure that your version of WinPond is the latest version, compare the Build number in About WinPond with the latest version installed on your system.



WinPond Windows/DOS Differences

The conversion and upgrade from the DOS Missouri Pond program to the MS Windows WinPond program involves differences resulting from the change from a DOS to a Windows environment. These changes primarily involve the use of function keys to move the cursor in DOS, to the use of a Mouse to move the cursor in Windows. WinPond uses common Windows conventions including tool bars, lists, and multiple windows. WinPond also, uses many of the features of Windows.

On some screens (tabs) the changes in data entry will not be extensive. Data entry involves keying in the data into a data entry box and using the Tab key to move the cursor to the next data entry box.

In other cases, the change from DOS to Windows will involve moving from one screen (tab) to another screen (tab) to initiate the execution of a procedure. The entry of data in a specific field can initiate the execution of a programmed procedure. Sometimes entering data on a screen will effect a change on another screen (tab) farther down the WinPond design sequence.

In general, when data is supplied by the WinPond program on a screen, the value of the data in a data entry box can be changed. The new data entry value will override the previous value in the box which originated either from previously entered data, from

calculations or from default data.

After a review of WinPond processing from a DOS to Windows conversion, upgraded processing has been added to provide smoother processing in the design of a dam.

Some of these upgraded features include the following:
1. Runoff Curve Number (RCN) processing on the Hydrology tab - T3
2. Processing of Trials on the Principal Routing tab - T7
3. Design check processing for Pipe Length on the Design Check tab - T10
4. Height of Instrument and Percent ground slope on Ground Profile/Cross Section tab - T11.
5. Template processing for Embankment Cross Section processing on Embankment Cross Section tab - T12
6. Report processing on the Reports tab - T14
7. Template processing for a WinPond dam project on the Elevation/Storage tab - T2. See Step 6 **Build a Template** on Elevation-Storage tab - T2, below.

WinPond Admin Setup Walkthru

ATTENTION: Microsoft .NET 1.1 must be installed before WinPond software installation is attempted.

Requirements for installing WinPond on your computer include the following actions:

1. Use your Web browser to download the WinPond software. Go to the CCE Certified
Website for XP applications.
   a. The URL for the CCE Certified Website:
      http://servicecenter.kcc.usda.gov/Sfw_a_d.htm
   b. On the CCE Certified Website, click on **Software S-Z.**
   c. Find the entry for WinPond (NOT YET)
   d. In the Location Available column in the WinPond row,click on **Download**.
   e. Download the WinPond software into the temp directory on your PC.
   f. Record the path for this location.
   g. Proceed to next step to **Install WinPond on your PC**
      Select either a **New WinPond Installation** or
      a **Previous WinPond Installation.**

2. Install WinPond on your PC.

Attention: When an error message about Microsoft .Net 1.1 appears, install Microsoft .Net 1.1 software before attempting to install WinPond.

When installing WinPond on a computer, if .Net 1.1 is present on the system no error message will appear.

When the computer is a **CCE computer** and .Net 1.1 software is not
found the following message will appear:

Net 1.1 not found
This application requires 1.1
Please Install CCE UPDATE1

When the computer is **NOT a CCE compute**r and .Net 1.1 software
is not found the following message will appear:

.Net 1.1 not found
This application requires 1.1
Please Install dotnetfx.exe

Download dotnetfx.exe from Microsoft

******* Uninstall the old WinPond release *******

If an earlier WinPond release is currently installed on your PC, uninstall the old software.

a. **Save critical data files**

Save any critical data files to the following data path location.
(See Step 3. Set Defaults\a. General Tab below).

C:\Documents and Settings***userId***\Local Settings\Application Data\USDA.NRCS\WinPond

Files saved in the WinPond install directory must be deleted when a new version is installed. The WinPond program files (install directory) are located at C:\Program Files\USDA\WinPond

b. Previous WinPond Installation:

Remove previous WinPond software package and load the latest build, WinPond, Version 1 software:

1) Click **Start**, point to **Settings.**
2) Click **Control Panel.**
3) On the Control Panel window double click on the **Add or Remove Programs icon.**
4) On the Add or remove Programs window, click on **WinPond.**
5) Click on the **Change/Remove** button.
6) Click on the **Remove** radio button (round).
7) Click on the **Next** button.
8) On the Confirm Install window, click the **OK** button.
9) Click on the **Finish** button.
10) Close all windows opened in the Add/Remove process above.

11) **Remove the entire folder** when present - C:\Program Files\USDA\Winpond
12) Go to **Step 2.c New WinPond Installation** below to load new WinPond version.

******* Install the latest WinPond release *******

ATTENTION: Microsoft .NET 1.1 must be installed before WinPond software installation is attempted.

To install the latest WinPond, Version 1 software proceed as follows:

c. New WinPond Installation

1) Close running programs on the system.
2) Click **Start**.
3) Click **Run.**
4) In the RunWindow, click the **Browse** button.
5) Move to the file location (path) where you downloaded the winpond_inst.exe file.
6) Click on **winpond_inst.exe** in the Browse window to populate the file name box.
7) In the Browse window, click on the **Open** button .
8) In the Run window, which now contains the path of the winpond.inst.exe file, click the **OK** button**.**

Your **WinPond project files** will be located at the file location (path) you entered on the Tools/Options/General Menu. Add a WinPond Projects folder at that path location to store your WinPond project files. See Topic Y WinPond Default Processing.

Files saved in the WinPond Install directory will be deleted when a new version is installed. The **WinPond program files** (Install directory) are located at My Computer\C:\Program Files\USDA\WinPond

3. Set Defaults

To change default values for creation of a project in WinPond, on the toolbar at the top of the screen, click on **Tools/Options**.

Many of the following defaults are used in making calculations related to the tabs listed below. These defaults used in calculations often are not displayed on any of the WinPond tabs.

The order of the options tabs shown below is the same order as the defaults for the DOS Pond program.

Options tabs displayed include the following:

	WinPond Tab Location
a. **General Tab**	**Any WinPond tab**

Data Path

This data path contains the **default value** for storing user program files including

DEFAULT.PRJ files and samples. This path automatically saves/opens WinPond project files. The following data path is displayed in the data path window:

C:\Documents and Settings***userId***\Local Settings\Application Data \USDA.NRCS\WinPond

This data path contains the location of your saved .prj files (dam project files). This area will not be affected by installation of a new software version of WinPond.

The WinPond data path default value contains the current ***userid***. This use of the userid allows different users the option of creating a set of unique values that are specific to their WinPond designs.

If you decide to change the value in the data path to a **user defined (new) path**, all future WinPond saves and opens of project files will start in this user defined path.

Footer for Cover Page
Office Name & Address for the Project Reports
Required data

1) To enter Office Name and Address, on the menu click on Tools/Options.
2) On the Options General Tab, in the Footer for Cover Page box, enter Office Name and Address.
3) Click the **OK** button

b. **Auxiliary Spillway**	**Auxiliary Spillway tab - T8**
Auxiliary Spillway to top of dam (ft.)	2.00
Freeboard (ft.)	1.00
Minimum bottom width (ft.)	10.00
Maximum bottom width (ft.)	150.00

c. **Ground**	**Ground Profile/Cross Section tab - T11**	
Station Increment (ft.)	0.00	
Repeat distances:	**Yes**	x
	No	
Offset for slope (ft.)	30.00	

d. **Rainfall**	**Hydrology tab - T3**	
Rainfall distribution type:	I	
	IA	
	II	x
	III	

e. **Drawdown** **Principal Routing tab - T7**

NOTE: Drawdown Time uses the shortest of these 3 conditions:

Feet above inlet	0.00
Percentage of Storage drained	85.0
Minimum flow in cu.ft./sec.	0.10

f. **Earthwork** **Embankment Cross Section - T12**

Slopes	**Settled**	x
	Constructed	
Berm Settles	Yes	
	No	x

4. Test with Sample file:

Sample file data has been provided for X Dam projects:
Sample 1: Missouri, Boone County
Sample 2: Missouri, Worth County

To use a sample file, on the Project Tab:
Click on **File** on the Main Menu,
Click on **Open**,
Click on the selected Sample file.

5. Test the Winpond design using Trials:

The WinPond program provides the dam designer with the capability to test parts of the current WinPond design by using trials. Trials are present on the following tabs:

a. Conduit trials to test design variables for adjusting the **dam height**
Conduit - T6
Principal Routing - T7

b. **Input Channel characteristics** (calculated method only) - 2 trials
Auxiliary Spillway - T8
Length
Slope

c. Cross section Templates
Each template represents a **possible design for the current dam.**
Embankment Cross Section - T12

6. **Project data recovery**

In the event of a major error such as a data exception

a. **Close the file immediately!!! Do not save** the file!
Do not move to the next tab (data is automatically saved**)!**

A data exception will corrupt the current dataset resulting in unreliable data.

b. On the Menu Click on **Tools/Recover Last Project** to recover uncorrupted data
from a previous save. Otherwise, **rekeying all the data** may be necessary.

c. To have a record of data entered, make a screen print of each tab,

after data has been entered.

******* To create a screen print for a WinPond tab. *******

1. Hold down the Alt key and press the Print Screen key.
2. On a blank MS Word screen,
   On the Menu, Click Edit/Paste to display the screen print.
   On the Menu, Click Print.
3. Clear the MS Word screen.
   Click near the edge of the screen print until black dots appear at the edge.
   Press the Delete key to clear the screen.

7. **Build a Template** for a dam project on Elevation-Storage tab - T2

When creating a WinPond Dam Project Template for other dam projects in this state, click on the **link** in the lower right corner of the screen: **I am making a template project**.

When you are creating a Dam Project Template, **do not enter storage data on the Elevation-Storage tab (T2) or ground data on the Ground Profile/Cross Section tab (T11).** Clicking on the Template project link will allow passage to the Hydrology tab (T3) without entering data on the Elevation-Storage Tab (T2).

To **Build a Dam Project Template** or to **Use the WinPond Template:**

******* Build a Dam Project Template *******

1. When building a Dam Project Template, enter data in all fields that will remain constant from one Dam Project to the next.

2. Data on the Elevation-Storage tab will change for each project. **Do not enter data** on the Elevation-Storage tab (T2).

3. Click the link: **I am making a template project.**
   Clicking on this template project link will allow the user to advance to the Hydrology tab (T3) without entering data on the Elevation-Storage tab (T2). Otherwise, data entry is required on the Elevation-Storage tab.
4. Data initially appearing on the Hydrology tab comes from the default.prj file.
   The user can change any numbers on the following tabs:
   Hydrology tab, T3
   Sediment, T4
   Principal Spillway, T5
   Conduit, T6
   Principal Routing, T7
   Aux Spillway, T8
   Aux. Routing, T9
   Design Check, T10

5. **Do not enter data** on the Ground Profile/Cross Section tab. (T11). Data on the Ground Profile/Cross Section tab will change for each project.

6. Data can be changed on the following tabs:
   Embankment Cross Section, T12
   Ground/Embankment Intersection, T13
   Reports, T14
7. Termination of the template should be decided by the user.
   The best place to terminate a WinPond template is after reports have been **selected**.

8. **Do not create reports**. WinPond will fail, because data is missing from the tabs that do not have data.

9. When the WinPond template has been prepared, save the completed Template:
   a. On the menu click on **File**
   b. Click on **Save As.**
   c. Key in a file name, e.g., WinPondTemplateA
   d. Click on the **Save** button.

******* Use the WinPond Template *******

1. In WinPond, on the menu click on **File.**
2. Click on **Open.**
3. Click on template name, e.g., WinPondTemplateA
4. Use the WinPond template to build a Dam project.

10. **Enter Project Data** for a Dam in your State/County.

A Project Tab - T1 01/27/2005

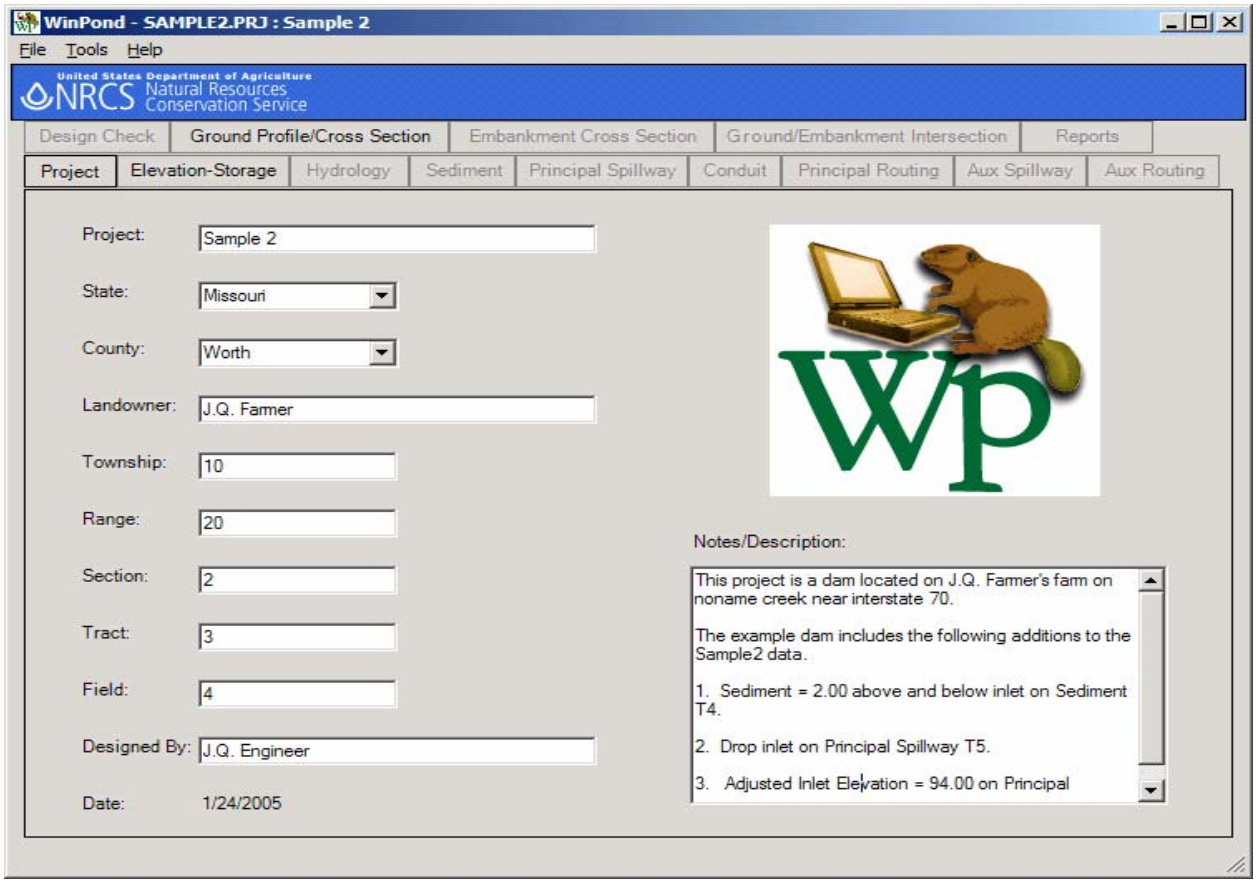
The Project screen is used for entering data related to project report identification.

To see the shaded current tab location more clearly, move the mouse pointer over the tabs. The current tab shading will be displayed.

On any tab the current tab is highlighted and outlined. Tabs accessible from the current tab are highlighted. For example, from the current Project tab (T1) active tabs accessible are Elevation-Storage (T2) and Ground Profile/Cross Section (T11). All other tabs that are not highlighted are locked out.

For data entry on a WinPond tab, proceed from the current data entry location to the next data entry location by pressing the **Tab** key.

Generally, when a data entry box is present, data can be entered overriding the previous data in the box.



******* Data Entry for Project on Tab 1 *******

Project data are entered on the Project Tab. These data appear as identifying data on

the report header for each set of reports created. The report header is displayed on each set of one or more reports requested by the user. The following data are entered on the Project tab:

1. **Project**
Required data

Official project name, e.g., Beaver Dam 1
Enter a brief description of the project in the Notes/Description Box. See Step 12. Notes/Description below.

2. **State**
Required data

In the State choice list box, click on the down arrow and select the state name. States are from the TR55 Rainfall Database.

States on the choice list include the 50 United States, Pacific Basin, Puerto Rico, Virgin Islands, and Washington, DC.

Generally, from the Great Plains to Eastern United States data will be present in the TR55 Database. From the Rocky Mountains west, data the TR55 Database will be equal to zeros.

To locate the wanted state on the choice list, either use the scroll bar on the right side of the choice list, or type in the first 5 characters of the wanted state. Click on the wanted state to make your selection.

3. **County**
Required data

In the County choice list box, click on the down arrow, and select the county where the project is located. Counties are from the TR55 Rainfall Database.

The county entered is used to determine the rainfall values to be used.

To locate the wanted county on the choice list, either

use the scroll bar on the right side of the choice list, or type in the first 5 characters of the county. Click on the wanted county to make your selection.

4. **Landowner**
Required data

Name of the Landowner, e.g., John Q. Farmer

5. **Township**
Optional data

Project location, e.g., 47N

6. **Range**
Optional data

Project location, e.g., 12W

7. **Section** — Project location, e.g., 25
Optional data

8. **Tract** — Project location, e.g., 3
Optional data

9. **Field** — Project location, e.g., 2
Optional data

10. **Designed By** — Designer name or initials, e.g., J.Q. Engineer
Required data

11. **Date** — Computer generated last modified date, e.g., 11/20/2004.

12. **Notes/Description**
Optional data

Enter a brief statement describing the current Project, e.g., This project is a Dam located on John Farmer's farm on noname creek near Interstate 70.

Add notes to describe any special characteritics about this project to help a reviewer at a later date.

For ease of reading this description on the report heading, number the items in the description and supply a blank line after each item. The maximum number of lines printed for this Description item is limited to about 65 printed lines on the report. The storage space for the Description will hold more items that will not be printed.

When the length of notes exceeds the size of the window, use the scrollbar on the right side of the data entry window to view the entire message.

13. **Office Name & Address for the Project Reports**
Required data

To enter Office Name and Address, on the WinPond menu click on Tools/Options. On the Options/General Tab, in the Footer for Cover Page box, enter Office Name and Address. Click on the **OK** button.

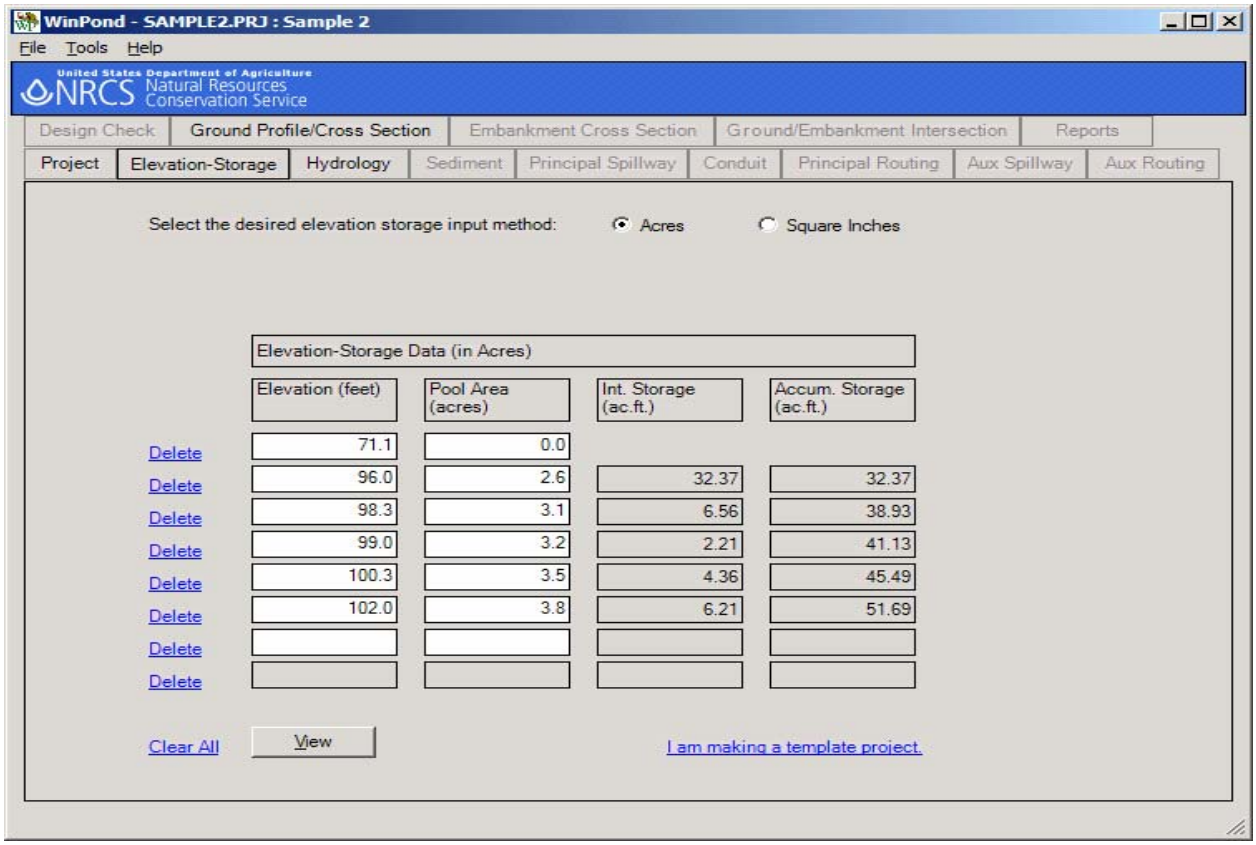
B Elevation-Storage -- T2 01/27/2005

******* Create a WinPond Project Template *******

To create a WinPond Dam Project Template for use in creating other dam projects in this state, click on the **link** in the lower right corner of the screen, **"I am making a template project"**. When you are creating a Dam Project Template, **do not enter storage data on the Elevation-Storage tab (T2) or ground data on the Ground Profile/Cross Section tab (T11).** Clicking on the Template project link will allow passage to the Hydrology tab (T3) without entering data on the Elevation-Storage Tab (T2).

To **Build a Dam Project Template** or to **Use the WinPond Template**, go to the end of this topic for instructions. For normal Elevation-Storage processing see **Data Entry for Elevation-Storage on Tab T2** below**.**

Acres Method



******* Data Entry for Elevation-Storage on Tab T2 *******

The Elevation-Storage Tab provides a choice of the method used to enter your elevation-storage data. The elevation (stage) storage data is entered on this Tab. Depending on the method chosen one of two screens will be displayed.

When the **Acres method** is chosen, the Elevation-Storage Data (in Acres) screen is displayed.

When the **Square Inches method** is chosen, the Elevation-Storage Data (in Square Inches) screen is displayed.

Select a Method

1. When new project data will be entered, click on the Elevation-Storage Tab. The Elevation-Storage Data (in Acres) screen will appear.

2. Click on the appropriate radio (round) button to select the wanted elevation storage method: Acres or Square Inches. The selected unit of measure for Pool Area will be used in this pond design.

3. The **recommended sequence** for entering data on this Tab includes the following.
   a. When entering data, enter 1 row at a time.

   b. Enter the data for column 1.
      Tab to next column.
      Enter data for column 2.
      Tab to column 1 on the next line.

      The Interval Storage and Accumulated Storage values will be calculated for the last row.

   c. To install a new elevation row of data within an existing ascending sequence of entered data, enter the new row of data in the blank boxes below the ascending sequence. Install the new values into the ascending sequence by pressing the Tab key.

   d. To remove a data row from the existing ascending sequence, click on the **Delete** link to the left of the selected data row.

   e. To remove data from all rows, click on the **Clear All** link located below the series of Delete links on the left side of the screen.

Acres Method

1. When **Acres** radio button has been clicked, the Acres radio button will be turned on. The title, "Elevation Storage Data (in Acres)" will appear above the table, and. four data entry columns will be displayed:
   Elevation (feet)
   Pool Area (acres)
   Int. Storage (ac.ft.)
   Accum. Storage (ac.ft.)

   a. Enter **Elevation (feet)** and **Pool Area (acres)** data.
      In this table data can be entered **only in columns 1 and 2**. When using an example or a saved project file with data in this table to create a new project, click on the **Clear All** link below the series of Delete links on the left side of the screen. Enter the wanted data in the empty table.

Data on the Elevation-Storage Tab

Elevation (feet) Known elevations for the pool areas, should be entered in the first column. The easiest way to enter the elevations is in ascending order.

Pool Area (acres) Enter the Pool area at each corresponding elevation in the second column. Pool Area should be entered in acres or square inches depending on the method chosen.

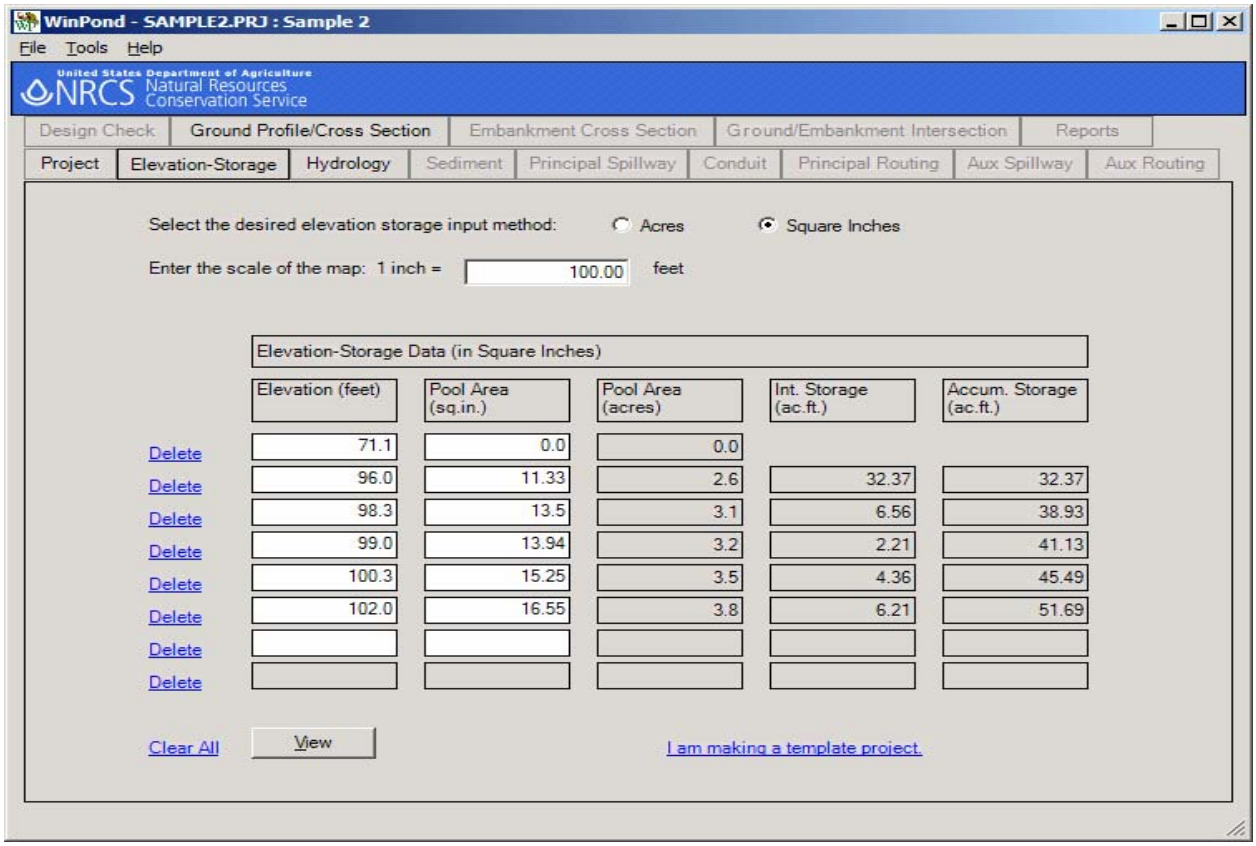
When the **Acres method** has been selected and data

has been entered in the second column as acres, the data in the second column are automatically converted to Square Inches when the method is changed to Square Inches. The acres values will then appear in the third column.

For numbers in the Pool Area column, as Elevation increases Pool Area values must also increase.

Int. Storage (ac.ft.) and Accum. Storage (ac.ft.) Interval Storage and Accumulated Storage are calculated values which are displayed in the two right most columns. These values are displayed in acre feet and cannot be edited.

Square Inches Method



1. When **Square Inches** radio button has been clicked, the **Square Inches** radio button will be turned on. The title, "**Elevation Storage Data (in Square Inches)"** will appear above the table, and **five** data entry columns will be displayed:
   - Elevation (feet)
   - Pool Area (sq.in.)
   - Pool Area (acres)
   - Int. Storage (ac.ft.)
   - Accum. Storage (ac.ft.)

   The scale of the map: 1 inch = 100.00 feet will be displayed.
   The scale 1 inch = nnn.nn can be changed.

   When the **Square Inches method** has been selected and data in square inches have been entered in the second column, these square inches data are converted to acres, when the **Tab** key is pressed. These acres data are then displayed in the third column.

   After data have been entered using the Acres Method, a selection can be made for the Square inches method; the Pool Area square inches values will be generated automatically.

   Enter the value for Scale of the map: 1 inch = nnn.n **feet**
   When the value for Scale is changed, the values in the right three columns (Pool

Area (acres), Int Storage and Accum. Storage) are adjusted automatically.

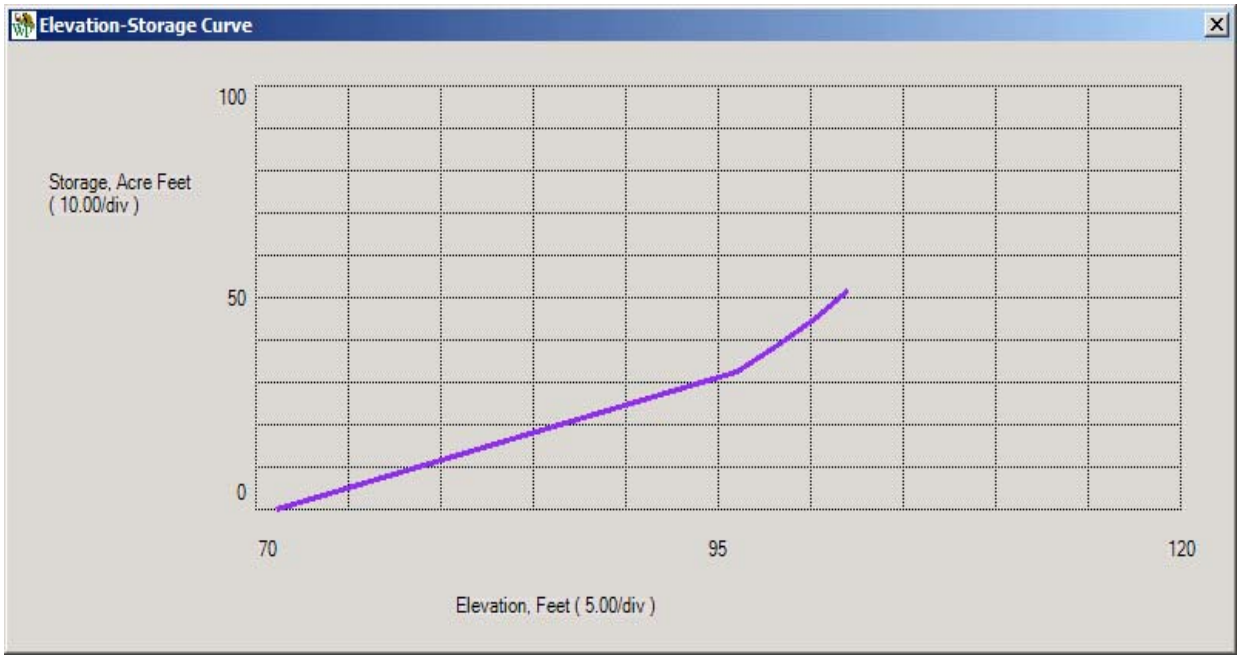
Enter Elevation-Storage Elevation and Pool Area (sq.in.) data to calculate Interval Storage and Accumulated storage. Pool Area (acres) will be generated automatically.

Elevation (feet)	Elevations for which you know the pool area, should be entered in the first column on the left. The best way to enter the elevations is in ascending order. Data entry in ascending order is not required because elevation values are automatically sorted in ascending order as they are entered.
Pool Area (sq.in.)	Enter the Pool Area (sq.in.) at each corresponding elevation in column two. When the Square Inches method has been selected and when Pool Area in square inches values are entered, these square inches values are converted to acres and displayed in the third column. For numbers in the Pool Area column, as Elevation increases Pool Area values must also increase.
Pool Area (acres)	Converted acres from square inches values are automatically converted to acres values in the third column.
Int. Storage (ac.ft.) and Accum. Storage (ac.ft.)	Interval Storage and Accumulated Storage are calculated values which are displayed in the two right most columns. These values are displayed in acre feet and cannot be edited.

View Button

1. To display the Accumulated Storage graph for either Acres or Square Inches, click on the View button.

   The view for the Elevation-Storage Curve will be displayed.



******* Build a Dam Project Template *******

1. When building a Dam Project Template, enter data in all fields that will remain constant from one Dam Project to the next.

2. Data on the Elevation-Storage tab will change for each project. **Do not enter data** on the Elevation-Storage tab (T2).

3. Click the link: **I am making a template project.**
   Clicking on this template project link will allow the user to advance to the Hydrology tab (T3) without entering data on the Elevation-Storage tab (T2). Otherwise, data entry is required on the Elevation-Storage tab.

4. Data initially appearing on the Hydrology tab comes from the default.prj file.
   The user can change any numbers on the following tabs:
   - Hydrology tab, T3
   - Sediment, T4
   - Principal Spillway, T5
   - Conduit, T6
   - Principal Routing, T7
   - Aux Spillway, T8
   - Aux. Routing, T9
   - Design Check, T10

5. **Do not enter data** on the Ground Profile/Cross Section tab (T11). Data on the Ground Profile/Cross Section tab will change for each project.

6. Data can be changed on the following tabs:
   - Embankment Cross Section, T12

Ground/Embankment Intersection, T13
Reports, T14

7. Termination of the template, should be decided by the user.
   The best place to terminate a WinPond template is after reports have been **selected**.

8. **Do not create reports**. WinPond will fail, because data is missing from the tabs that do not have data.

9. When the WinPond template has been prepared, save the completed template:
   a. On the menu click on **File**
   b. Click on **Save As.**
   c. Key in a file name, e.g., WinPondTemplateA
   d. Click on the **Save** button.

******* Use the WinPond Template *******

1. In WinPond, on the menu click on **File.**
2. Click on **Open.**
3. Click on Template name, e.g., WinPondTemplateA
4. Use the WinPond template to build a Dam project.

C Hydrology - T3 03/28/2005

The Hydrology tab is used to input the data necessary for determination of peak flows for principal and auxiliary spillway storms. Most of these values are more thoroughly defined in the Engineering Field Handbook, Chapter 2 (EFH2). Peak flow values are displayed on the WinPond Project reports.

The message, NOTE: Values based on EFH, Chapter 2, relates to all numbers appearing on the Hydrology Tab - T3.

In the creation of a new WinPond project file, when moving from the Elevation-Storage Tab to the Hydrology Tab, the Hydrology Tab will be populated with data from the default.prj file. At this point no calculations have been made. Data on the Hydrology Tab should be changed to the specific data for this project.

The recommended sequence for entering data and the required range of values on this Tab includes the following:

1. Enter data for **Drainage area** (acres).
   Drainage area must equal **1 - 2000**.

2. Double click on the button on the right side of the **Runoff Curve Number (RCN)** data entry box:
   a. Enter data where appropriate on the Runoff Curve Number (RCN) screen.
   b. When all Runoff Curve Number (RCN) Determination data has been entered, click on the Save button at the bottom of the RCN screen.

   RCN must equal **59 - 98**.

   Another data entry option when drainage area and RCN are known is to enter the data directly replacing the default values on the Hydrology Tab.

3. Enter data for **Watershed slope (%)**
   Watershed slope must equal **0.5% - 64%**

4. Enter **Flow Length (feet).**
   Flow Length must be **greater than zero**.

5. Enter hours for **Time of concentration**. Time of concentration will be calculated.
   Flow Length must be **greater than zero**.

6. Select **Frequency** years from the choice lists for Principal Spillway and Auxiliary Spillway.

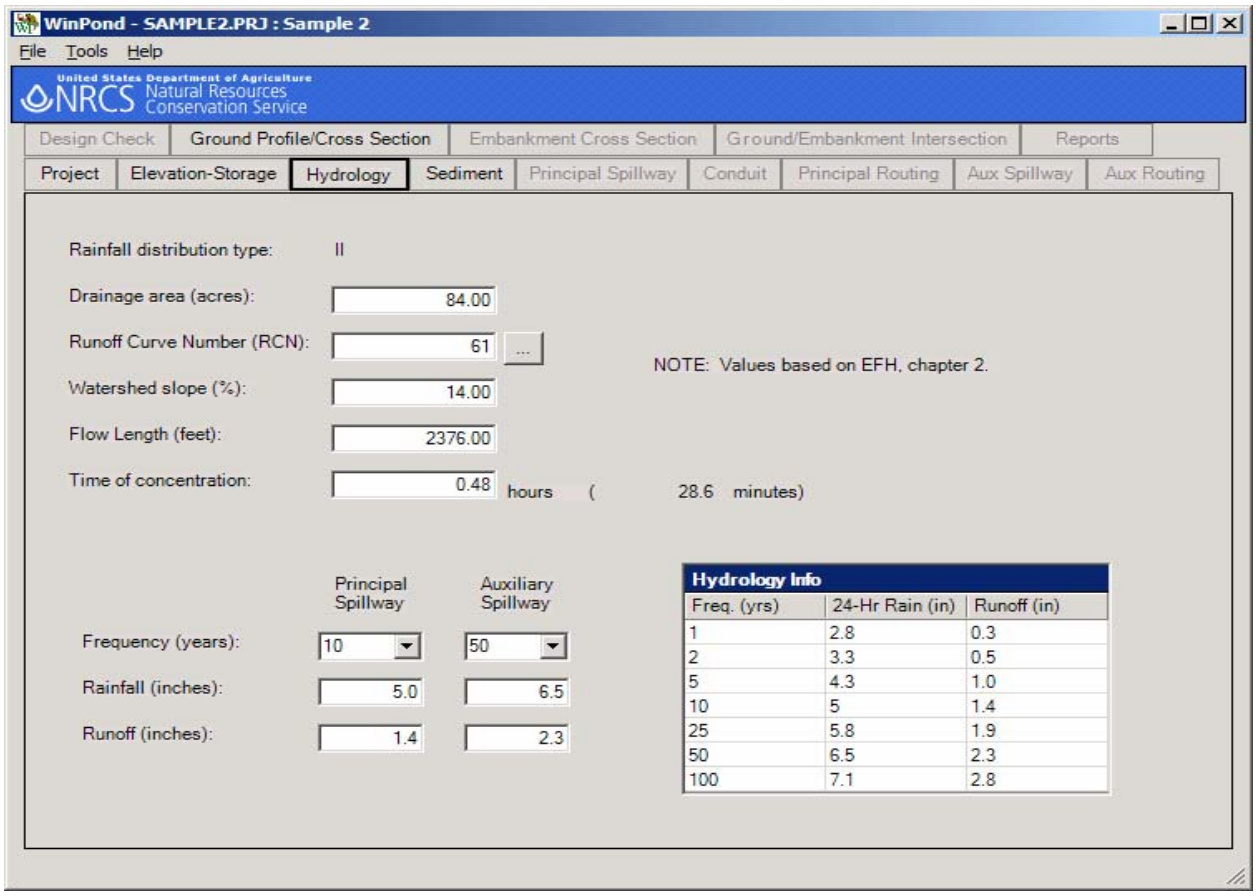
7. Enter Rainfall (inches) for Principal for Principal Spillway and Auxiliary Spillway.

8. Hydrology Info will be entered depending on the state location:

For **Western states**, which have no rainfall data in the TR55 Rainfall database, enter local rainfall data. Runoff (inches) will be calculated.

For **Eastern states**, data in the TR55 Rainfall database will be used for Rainfall and will populate the Hydrology Info table. Runoff (inches) will be calculated.

9. Runoff (inches) for Principal Spillway and Auxiliary Spillway will be calculated.



******* Data Entry for Hydrology on Tab T3 *******

1. **Rainfall Distribution Type**

A 24-hour storm distribution of I, IA, II or III should be displayed here. This value is set in the default file and can not be changed here. A map showing the locations of these distributions is shown in Figure 2-1, Chapter 2, EFH2. Rainfall

Distribution Type can be entered or changed on the WinPond Tools/Options/Rainfall Menu

WinPond first looks for Rainfall Distribution Type in the Rainfall database.

When Rainfall Distribution Type is found in the database, WinPond uses the database value.

When Rainfall Distribution Type is NOT found in the database, WinPond uses the default value stored in Tools/Options/Rainfall Menu.

2. **Drainage area (acres)**
Entered data

Drainage area (acres) is the watershed drainage area in acres.

To make sure that this calculation works for either acres or percentage **enter the drainage area in acres here**. The drainage area entered here will override any default value or no default value in the project file used.

Drainage area values are limited to a range from **1 - 2000**

acres.

3. **Runoff Curve Number (RCN)**
Calculated data

Click on the button at the right end of the RCN data entry box to access the RCN screens for calculation from entered data.

RCN must equal **59 - 98**.

These WinPond RCN categories describe the cover descriptions for the drainage area:

R1 - Cultivated Agricultural Lands
R2 - Other Agricultural Lands
R3 - Arid and Semiarid Rangelands
R4 - Fully Developed Urban Areas (Veg.Estab.)

Breakout for Cover Descriptions:

a. **Cultivated Agricultural Lands**

1) **Fallow**

a) Bare soil	---
b) Crop residue (CR)	poor
c) Crop residue (CR)	good

2) **Row Crops**

a) Straight row (SR)	poor
b) Straight row (SR)	good
c) SR + Crop residue	poor
d) SR + Crop residue	good
e) Contoured (C)	poor

f) Contoured (C)	good
g) C + Crop residue	poor
h) C + Crop residue	good
i) Cont_terraced (CT)	poor
j) Cont_terraced (CT)	good
k) CT + Crop residue	poor
l) CT + Crop residue	good

3) **Small grain**

a) Straight row (SR)	poor
b) Straight row (SR)	good
c) SR + Crop residue	poor
d) SR + Crop residue	good
e) Contoured (C)	poor
f) Contoured (C)	good
g) C + Crop residue	poor
h) C + Crop residue	good
i) Cont_terraced (CT)	poor
j) Cont_terraced (CT)	good
k) CT + Crop residue	poor
l) CT + Crop residue	good

4) **Close-seeded legumes/rotation meadow**

a) Straight row (SR)	poor
b) Straight row (SR)	good
c) Contoured (C)	poor
d) Contoured (C)	good
e) Cont_terraced (CT)	poor
f) Cont_terraced (CT)	good

b. **Other Agricultural Lands**

1) **Pasture, grassland or range** poor
fair
good

2) **Meadow - cont. grass (non-grazed)** ---

3) **Brush - brush, weed, grass mix** poor
fair
good

4) **Woods - grass combination** poor
fair
good

5) **Woods** poor
fair
good

6) **Farmsteads** ---

c. **Arid and Semiarid Rangelands**

1) **Herbaceous** poor
fair
good

2) **Oak - aspen** poor
fair
good

3) **Pinyon - juniper** poor
fair
good

4) **Sagebrush (w/grass understory)** poor
fair
good

5) **Desert shrub** poor
fair
good

d. **Fully Developed Urban Areas (Veg. Estab.)**

1) **Open space (lawns, parks, etc.)**
Poor condition; grass cover <50%
Fair condition, grass cover 50% to 75%
Good condition, grass cover > 75%

2) **Impervious Areas**
Paved parking lots, driveways

3) **Imperv. areas - Streets and roads**
Paved: curbs and storm sewers
Paved: open ditches (w/ right-of-way)
Gravel (w/ right-of-way)
Dirt (w/ right-of-way)

4) **Urban Districts Avg % imperv**
Commercial business
Industrial

5) **Residential districts (by lot size)** Ave % imperv
1/8 acre (town houses)
1/4 acre
1/3 acre
1/2 acre
1 acre

2 acre

6) **Western Desert Urban Areas**
Natural desert (pervious areas only)
Artificial desert landscaping

7) **Developing Urban Area (No vegetation)**
Newly graded area (pervious only)

4. **Data Entry for Runoff Curve Number (RCN) Determination categories**

a. On the RCN Determination screen locate the appropriate cover type, treatment if applicable, and hydrologic condition.

b. At the bottom of the RCN Determination screen, click on either the default Acres radio (round) button or the Percentage radio button to indicate the unit of measure used for the data entered for this RCN determination run.

c. Enter the drainage area in acres or percent as applicable under the wanted Hydrologic Soil Group.

d. Continue to search the RCN Determination screen using the scroll bar on the right side of the screen, and enter data in the RCN categories to accurately describe the cover on the drainage area.

e. When all data for the descriptions of the cover for drainage area has been entered, Accumulated Total and Weighted Curve Number will appear at the bottom of the RCN screen.

Click on the **Save** button at the bottom of a RCN Determination screen. Clicking the Save button will calculate the RCN and return to the Hydrology Tab - T3 The RCN Determination values for Drainage area (acres) and Runoff Curve Number (RCN) will replace those values on the Hydrology Tab.

f. Continue with Hydrology Tab data entry as described on the Hydrology Tab with Continued data entry for Hydrology Tab after RCN Categories Determination 5. Watershed Slope (%) below.

Continued data entry for Hydrology Tab after RCN Categories Determination

5. **Watershed Slope (%)** Average watershed slope in percent as defined in EFH2.
Entered data Watershed slope must equal **0.5% - 64%**

This value is the average slope of the land and not the watercourse. This Watershed slope can be determined:

$Y = (100\ C\ I) / A$

where:
Y = Average slope (%)
C = Total contour length (ft)
I = Contour interval (ft)

A = Drainage area (sq.ft.)

6. **Flow Length (feet)** Flow length is the longest flow path in the watershed from
Entered data the watershed divide to the outlet.

Flow Length must be **greater than zero**.

7. **Time of Concentration** Time of Concentration is the time required for runoff
Calculated data to travel from the hydraulically most distant point of the watershed to the outlet using the procedure in EFH2.

Time of Concentration hours must be **greater than zero**.

The user has the option of changing the calculated value. When this value has been changed and asterisk is displayed to indicate this change. Time is displayed in hours and minutes.

The following data are required for both **principal spillway** and **auxiliary spillway storms (lower left** corner of screen).

The **Principal spillway values must be lower** than the Auxiliary Spillway values.

8. **Freq. (years)** Select frequency from the choice list in the appropriate
Choice list data columns for **Principal Spillway** and **Auxiliary Spillway**.

The available frequencies along with the associated

rainfall, runoff, and peak flow values are displayed on the lower left corner of the screen.

9. **Rainfall (inches)** When a frequency is entered, an associated rainfall value

Database data entered 1st, data entry 2nd is retrieved from the TR55 Rainfall database of county rainfall. If the database does not contain values, Rainfall must be entered manually. This value can be changed at this location.

10. **Runoff (inches)** When a frequency and rainfall values are entered, an
Value is calculated associated runoff value is calculated. This value can
1st, data entry 2nd be changed at this location.

Hydrology Info box (Lower right corner of screen)

11. **Freq (yrs)** TR55 Rainfall database

12. **24-Hr Rain (in)** TR55 Rainfall database
a. Data for Eastern US are from the TR55 Rainfall database.

b. Enter Local Data for Western US here.

13. **Runoff (in)**
Calculated data

C RCN - Runoff Curve Number Determination 12/23/2004

Runoff Curve Number (RCN)

Calculated data

Click on the button at the right end of the RCN data entry box to access the RCN screens for calculation from entered data.

These WinPond RCN categories describe the cover descriptions for the drainage area:

R1 - Cultivated Agricultural Lands
R2 - Other Agricultural Lands
R3 - Arid and Semiarid Rangelands
R4 - Fully Developed Urban Areas (Veg.Estab.)

Breakout for Cover Descriptions:

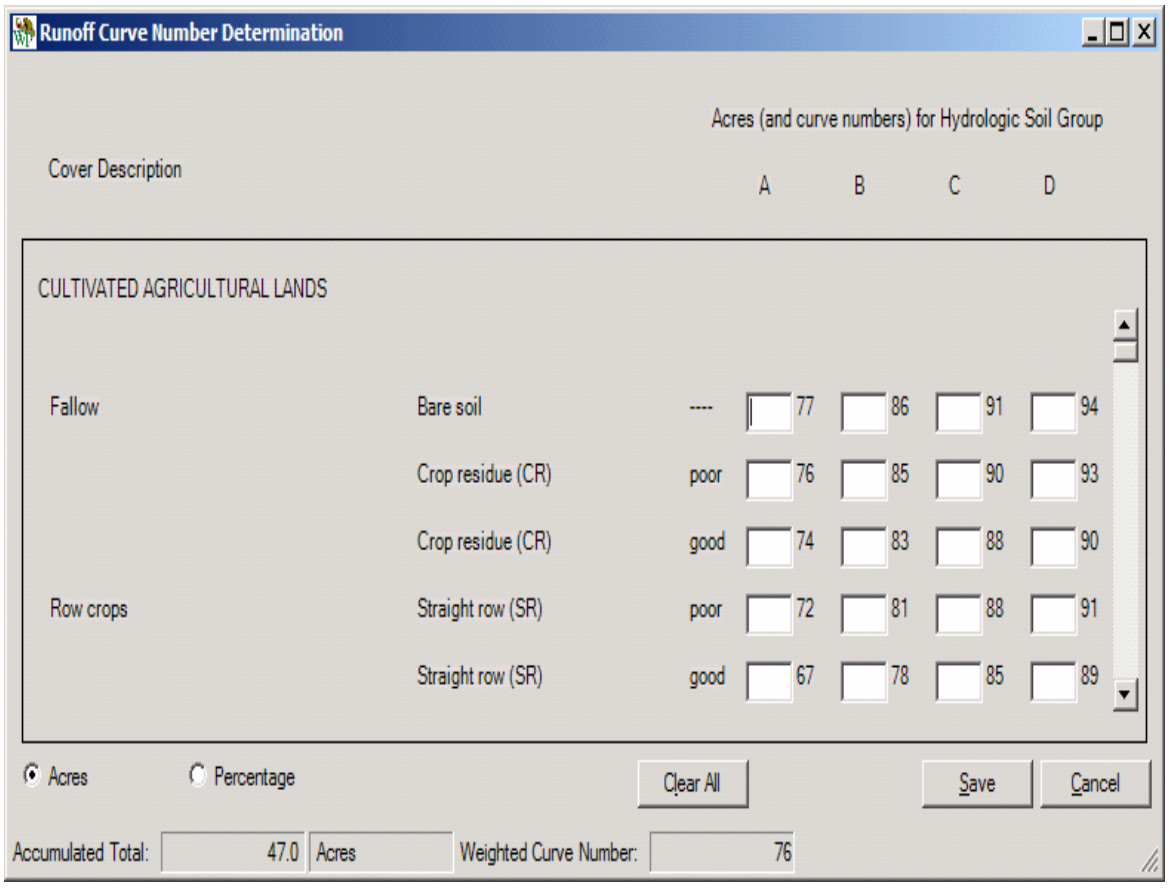
a. **Cultivated Agricultural Lands - R1**

1) **Fallow**

a) Bare soil	---
b) Crop residue (CR)	poor
c) Crop residue (CR)	good

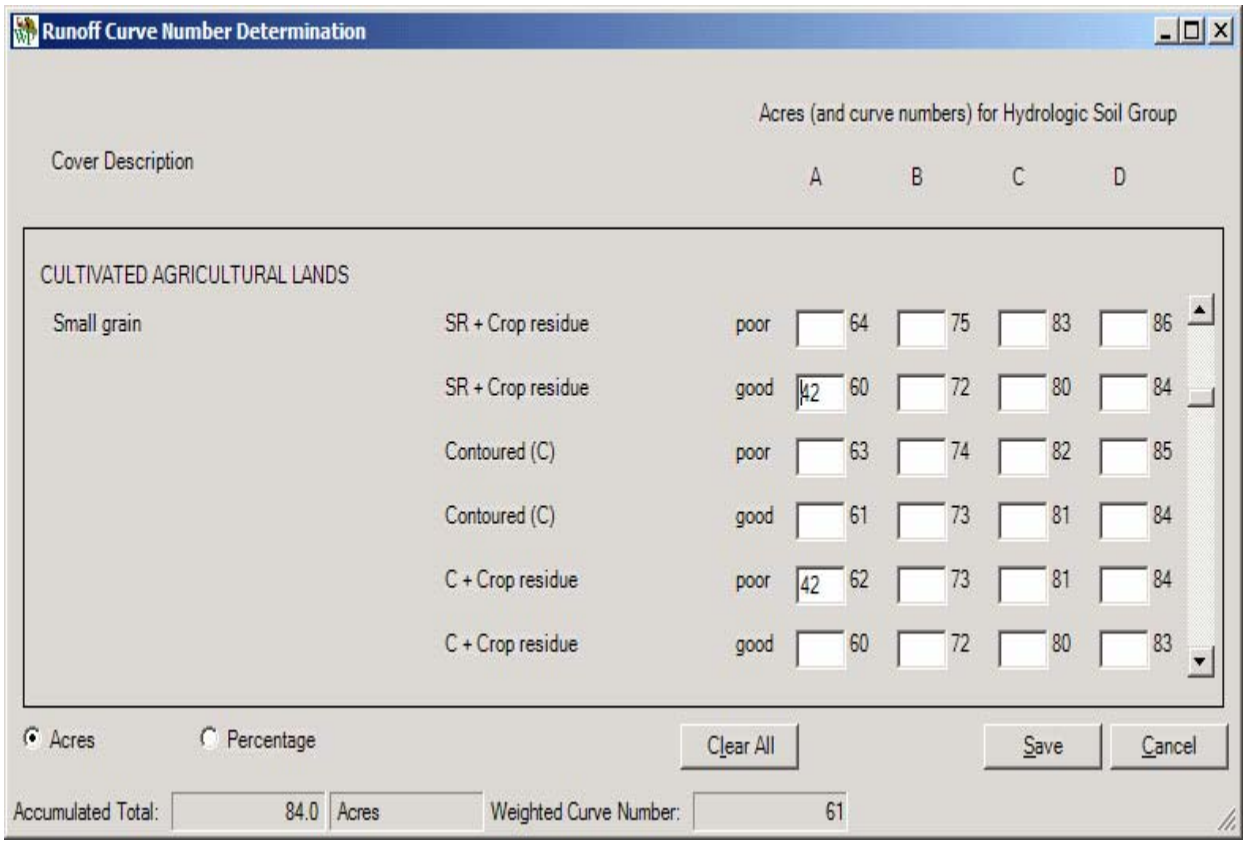
2) **Row Crops**

a) Straight row (SR)	poor
b) Straight row (SR)	good
c) SR + Crop residue	poor
d) SR + Crop residue	good
e) Contoured (C)	poor
f) Contoured (C)	good
g) C + Crop residue	poor
h) C + Crop residue	good
i) Cont_terraced (CT)	poor
j) Cont_terraced (CT)	good
k) CT + Crop residue	poor
l) CT + Crop residue	good



3) **Small grain**

a) Straight row (SR) poor
b) Straight row (SR) good
c) SR + Crop residue poor
d) SR + Crop residue good
e) Contoured (C) poor
f) Contoured (C) good
g) C + Crop residue poor
h) C + Crop residue good
i) Cont_terraced (CT) poor
j) Cont_terraced (CT) good
k) CT + Crop residue poor
l) CT + Crop residue good



4) **Close-seeded legumes/rotation meadow**

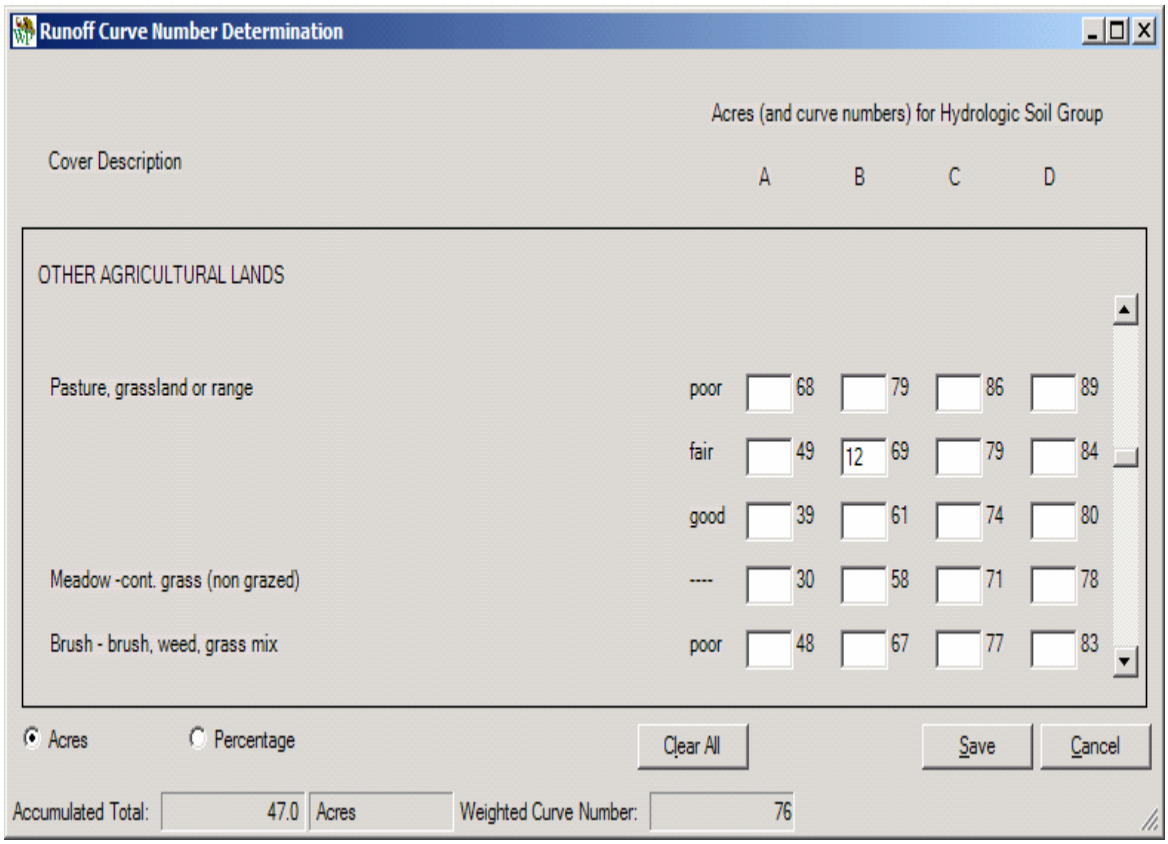
a) Straight row (SR) poor
b) Straight row (SR) good
c) Contoured (C) poor
d) Contoured (C) good
e) Cont_terraced (CT) poor
f) Cont_terraced (CT) good

b. **Other Agricultural Lands - R2**

1) **Pasture, grassland or range**poor
fair
good
2) **Meadow - cont.grass (non-grazed)** ---
3) **Brush - brush, weed, grass mix** poor
fair
good
4) **Woods - grass combination** poor
fair
good
5) **Woods** poor
fair

good

6) **Farmsteads** ---



c. **Arid and Semiarid Rangelands - R3**

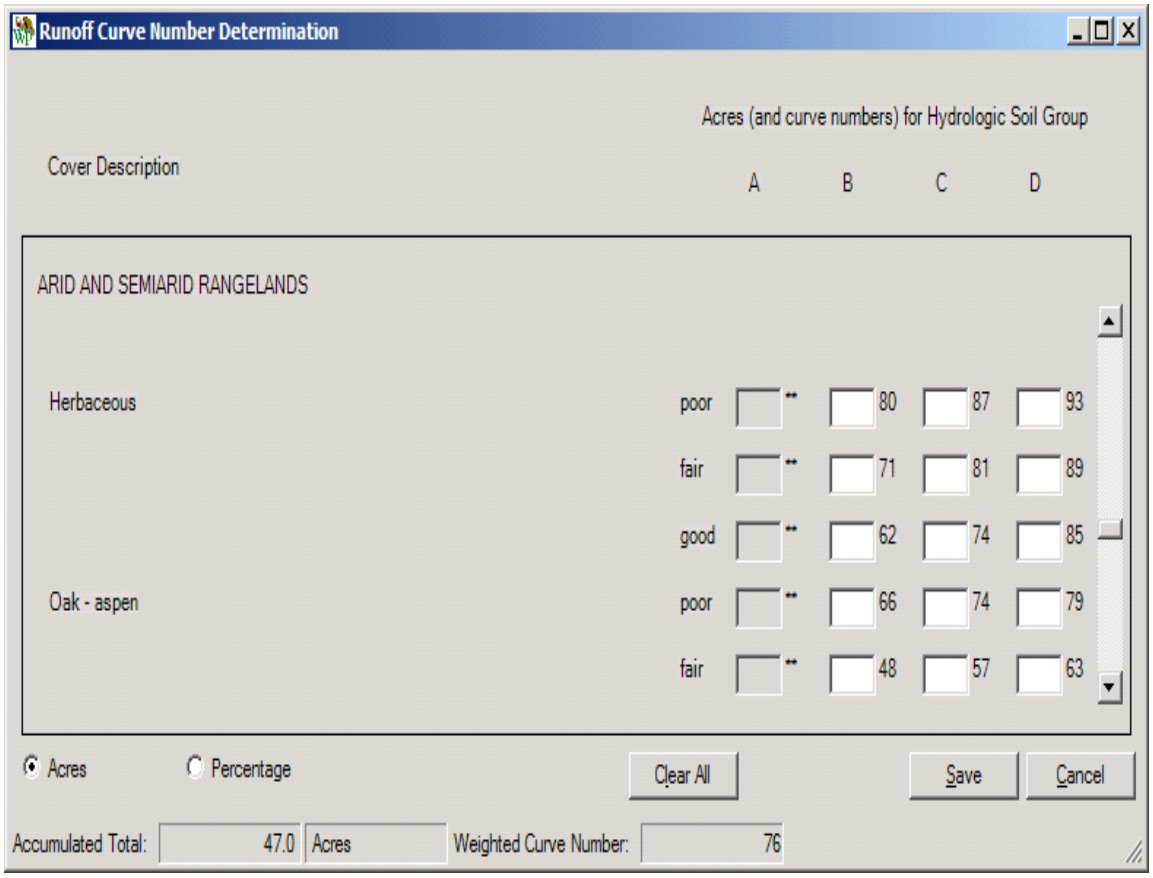
1) **Herbaceous** poor
fair
good

2) **Oak - aspen** poor
fair
good

3) **Pinyon - juniper** poor
fair
good

4) **Sagebrush (w/grass understory)** poor
fair
good

5) **Desert shrub** poor
fair
good



d. **Fully Developed Urban Areas (Veg. Estab.) - R4**

1) **Open space (lawns, parks, etc.)**
   Poor condition; grass cover <50%
   Fair condition, grass cover 50% to 75%
   Good condition, grass cover > 75%

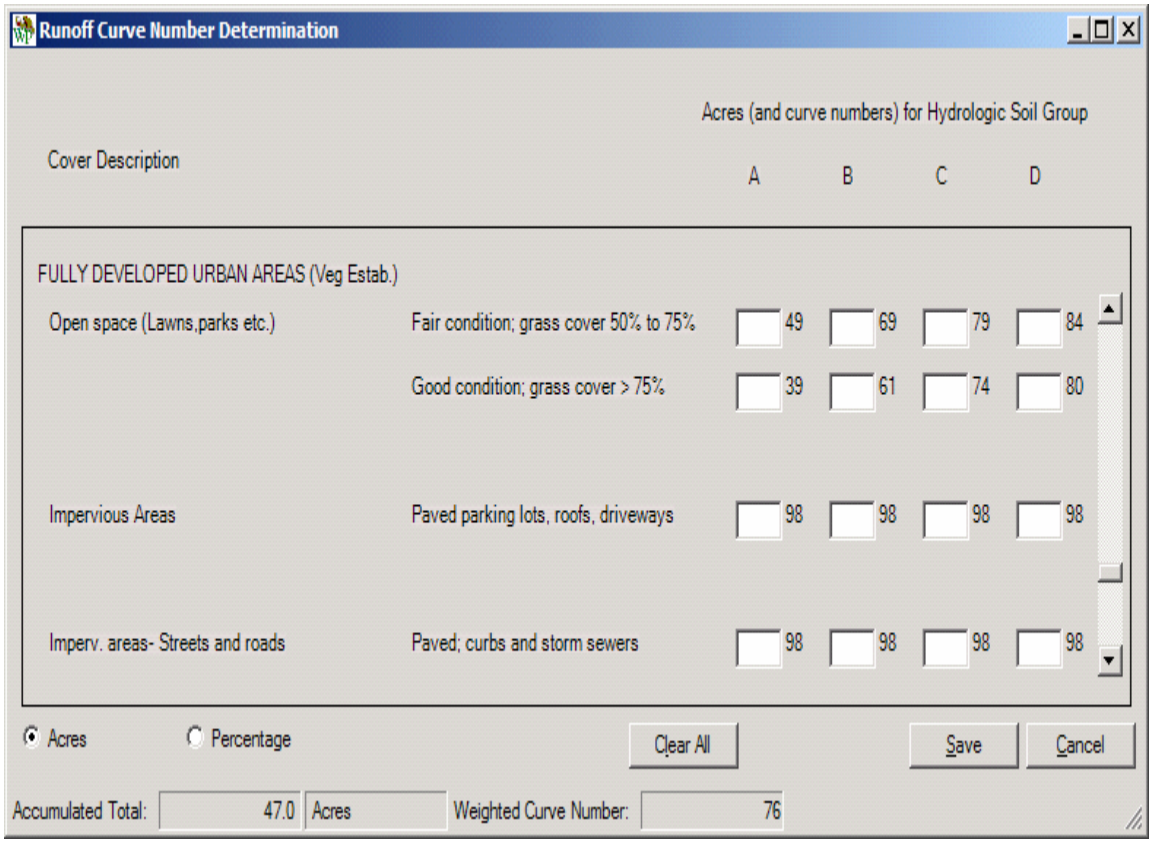
2) **Impervious Areas**
   Paved parking lots, driveways

3) **Imperv. areas - Streets and roads**
   Paved: curbs and storm sewers
   Paved: open ditches (w/ right-of-way)
   Gravel (w/ right-of-way)
   Dirt (w/ right-of-way)

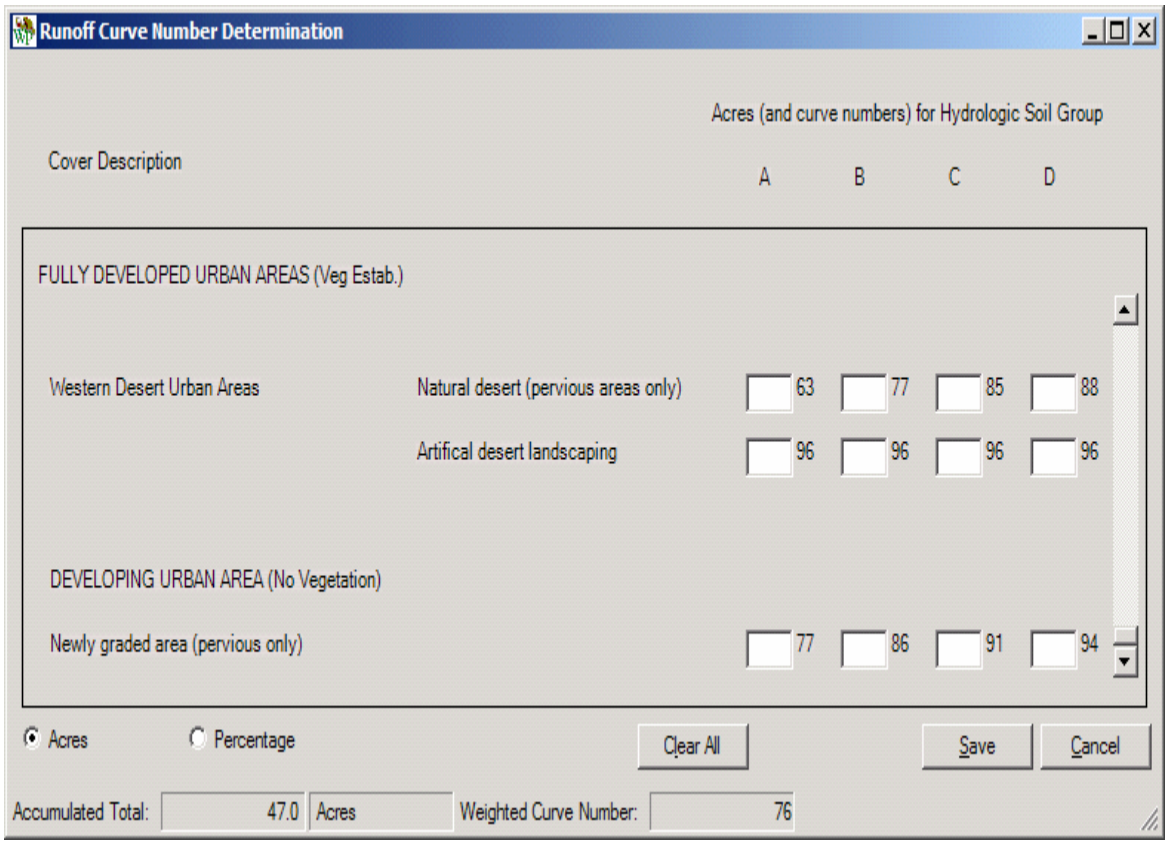
4) **Urban Districts Avg % imperv**
   Commercial business
   Industrial

5) **Residential districts (by lot size)** Ave % imperv
   1/8 acre (town houses)
   1/4 acre
   1/3 acre
   1/2 acre
   1 acre
   2 acre

6) **Western Desert Urban Areas**
   Natural desert (pervious areas only)
   Artificial desert landscaping



e. **Developing Urban Area (No vegetation)**
   1) **Newly graded area (pervious only)**



******* Data Entry for Runoff Curve Number (RCN) Determination categories** *****

a. On the RCN Determination screen locate the appropriate cover type, treatment if applicable, and hydrologic condition.

b. At the bottom of the RCN Determination screen, click on either the default Acres radio (round) button or the Percentage radio button to indicate the unit of measure used for the data entered for this RCN determination run.

c. Enter the drainage area in acres or percent as applicable under the wanted Hydrologic Soil Group.

d. Continue to search the RCN Determination screen using the scroll bar on the right side of the screen, and enter data in the RCN categories to accurately describe the cover on the drainage area.

e. When all data for the descriptions of the cover for drainage area has been entered, Accumulated Total and Weighted Curve Number will appear at the bottom of the RCN screen.

Click on the **Save** button at the bottom of a RCN Determination screen. Clicking the Save button will calculate the RCN and return to the Hydrology Tab - T3 The RCN Determination values for Drainage area (acres) and Runoff Curve Number (RCN) will replace those values on the Hydrology Tab.

f. Continue with Hydrology Tab data entry as described on the Hydrology Tab with Continued data entry for Hydrology Tab after RCN Categories Determination 5. Watershed Slope (%) below.

D Sediment -- T4 01/27/2005

All sediment originates from upstream water erosion. This sediment is deposited either above the inlet elevation, or at the bottom of the pond.

The **Above Inlet** sediment storage value on the Sediment tab is removed or subtracted from the calculated Storage volume (ac.ft.) of water in the pond to determine the value of Auxiliary Elevation (Auxiliary Spillway) displayed on the Principal Routing tab. This change will in effect raise the routed Auxiliary Spillway elevation.

The **Below Inlet** sediment storage value can be used to determine the minimum height for the Inlet Elevation (Primary Spillway Inlet Elevation). This minimum value is displayed on the Note to the left of the diagram on the Principal Spillway tab.

Above Inlet and Below Inlet sediment storage data are considered to be optional depending on the local situation.

1. For example, an **Above Inlet** volume of storage (ac.ft.) is assigned a value of 2.0 ac.ft.

On the Principal Routing tab, if Auxiliary Elevation equals 99.8, and the Above Inlet value of storage on the Sediment tab equals 0.0 ac.ft., the value of the Auxiliary Elevation on the Principal Routing tab will increase if the Above Inlet value of Storage on the Sediment tab is increased from 0.0 ac.ft. to 2.0 ac.ft.

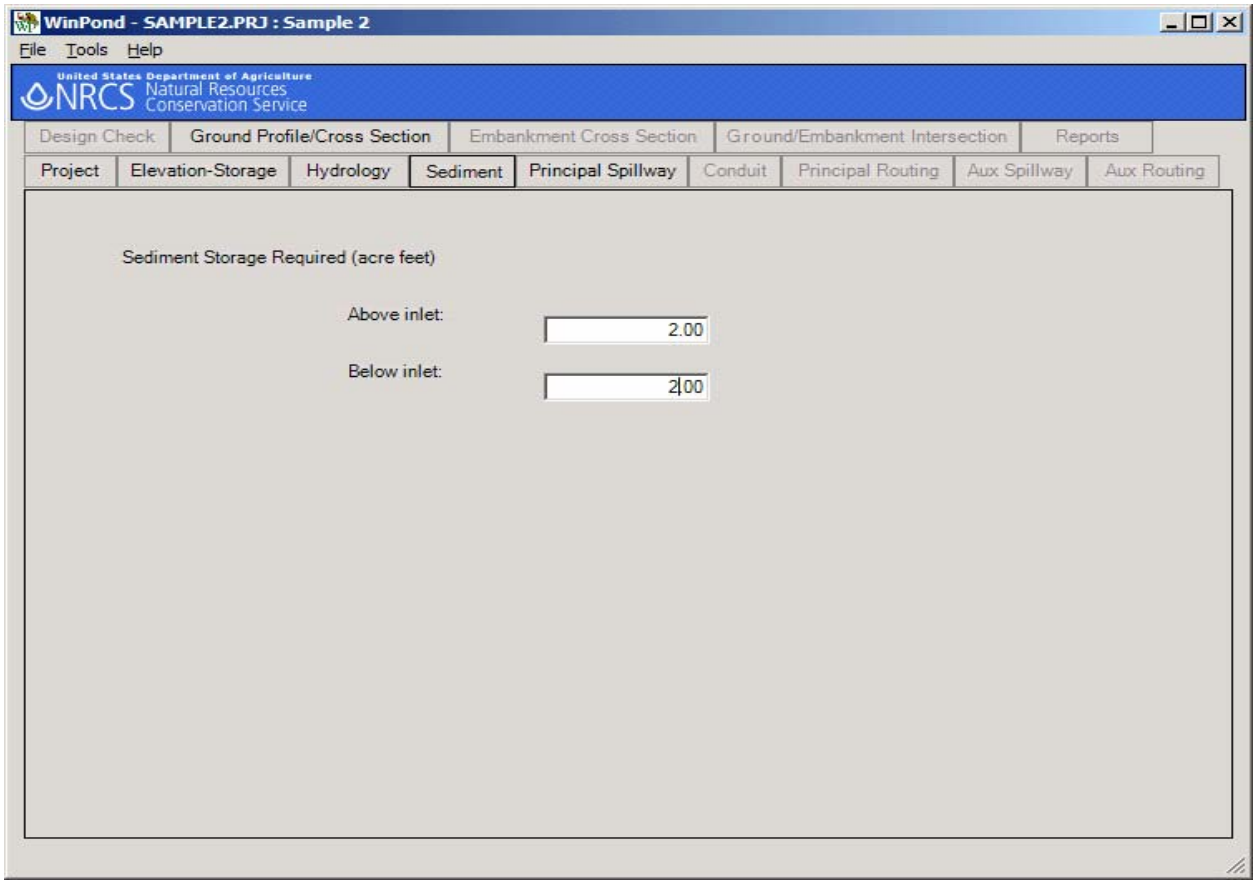
For a given value of Above Inlet storage, e.g., 2.0, the actual calculated amount of increase displayed for the Auxiliary Elevation on the Principal Routing tab will depend on the value of the calculated Storage for the specific dam project.

2. For example, a **Below Inlet** volume of storage (ac.ft.) is assigned a value of 2.0 ac.ft.

When a value greater than zero is present in the Below Inlet data entry box on the Sediment tab, the following message is displayed on the left side of the diagram on the Principal Spillway tab: NOTE: Inlet elevation required for sediment: nn.nn

The number displayed at the end of the above message is the minimum height for the Principal Spillway Inlet. This calculated Principal Spillway Inlet elevation is based on the Below Inlet storage value on the Sediment tab.

The Inlet Elevation data can be entered in the Inlet Elevation data entry box located next to the Inlet Elevation Note on the Principal Spillway tab. The Inlet Elevation value must be equal to or greater than the message number for Inlet Elevation displayed on the Principal Spillway tab Note.



******* Data Entry for Sediment on Tab 4 *******

On the Sediment Tab the data entry of storage volumes required for sediment storage is possible.

1. **Above Inlet**
   Optional data

The **volume of storage (acre feet)** required for **sediment above** the inlet elevation. This volume is used during the floodrouting procedure.

Above inlet sediment, which originates from upstream water erosion is deposited above the inlet elevation. This sediment deposit can be removed or subtracted from the calculated Storage Volume (ac.ft.) of water in the pond to determine the Auxiliary Elevation on the Principal Routing tab. This change will in effect raise the routed Auxiliary Spillway elevation.

2. **Below Inlet**.
   Optional data

The **volume of storage (acre feet)** required for **sediment below** the inlet elevation. This volume is used in determining a minimum inlet elevation from elevation storage values entered previously.

Below Inlet sediment originates from upstream water

erosion. This sediment deposit can be used to determine the minimum height of the dam Inlet Elevation on the Principal Spillway tab.

E Principal Spillway -- T5 01/27/2005

Data needed to define the cross section at the principal spillway are entered on the Principal Spillway Tab. These data are used in calculating conduit length, pipe discharge, various storage volumes, and other miscellaneous values.

Figures 7 and 8 below display the values requested for a Canopy inlet (Figure 7. Principal Spillway Info for a Canopy Inlet) and a Drop inlet (Figure 8. Principal Spillway Info for a Drop Inlet).

Figure 7. Principal Spillway Info for a Canopy Inlet

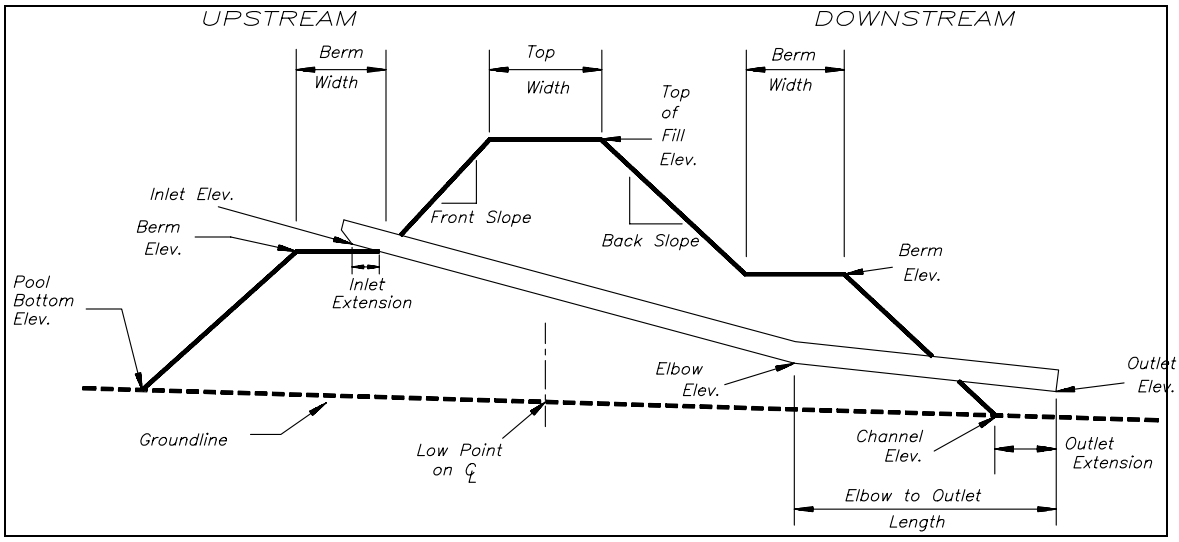
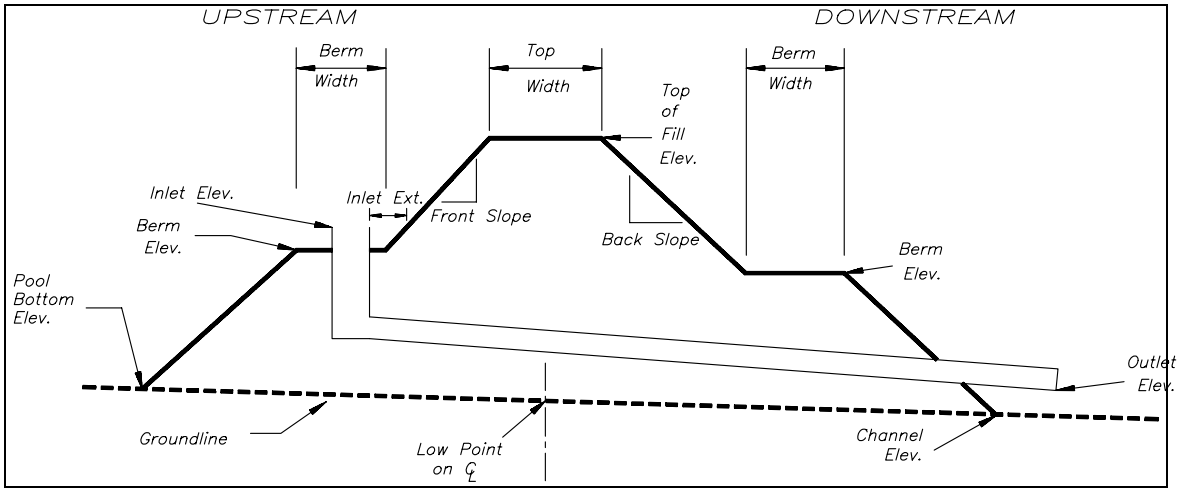
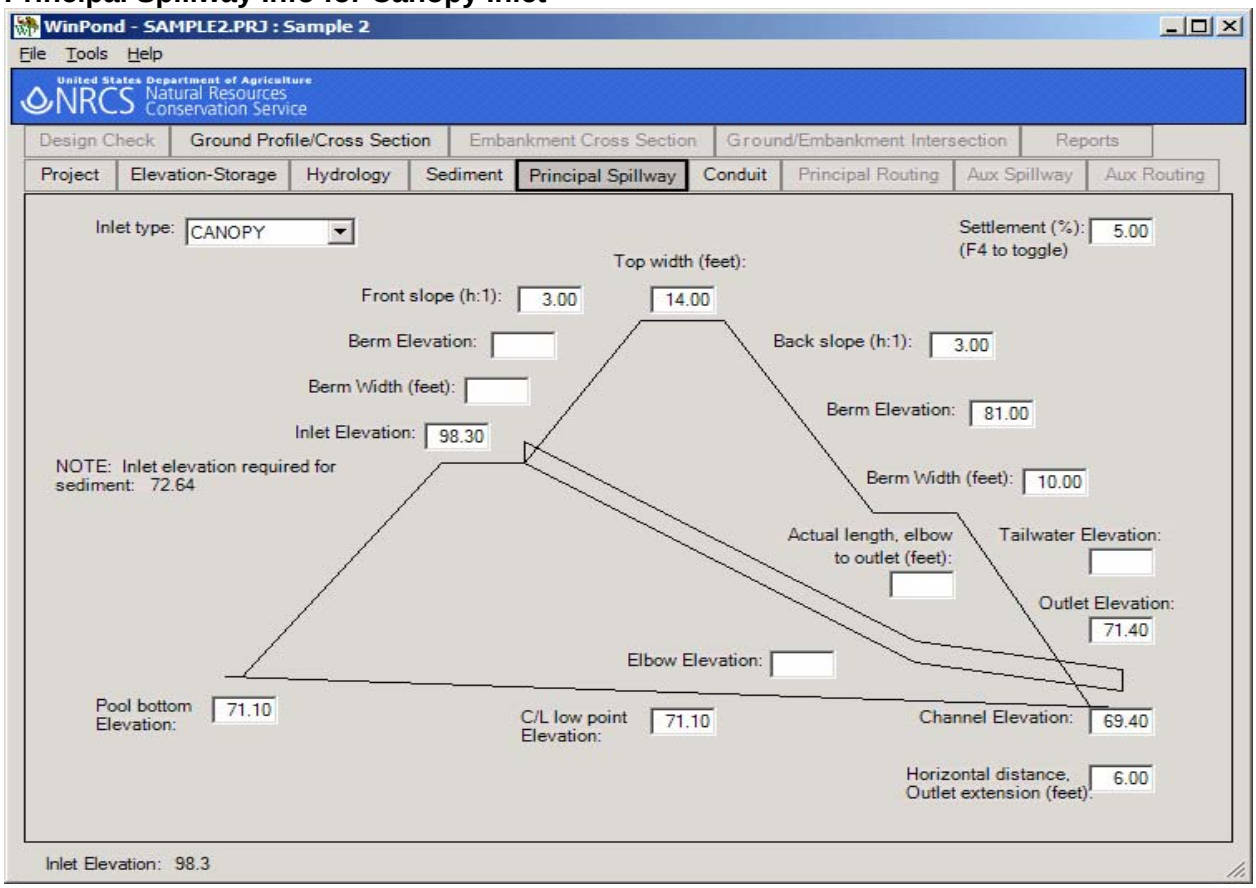


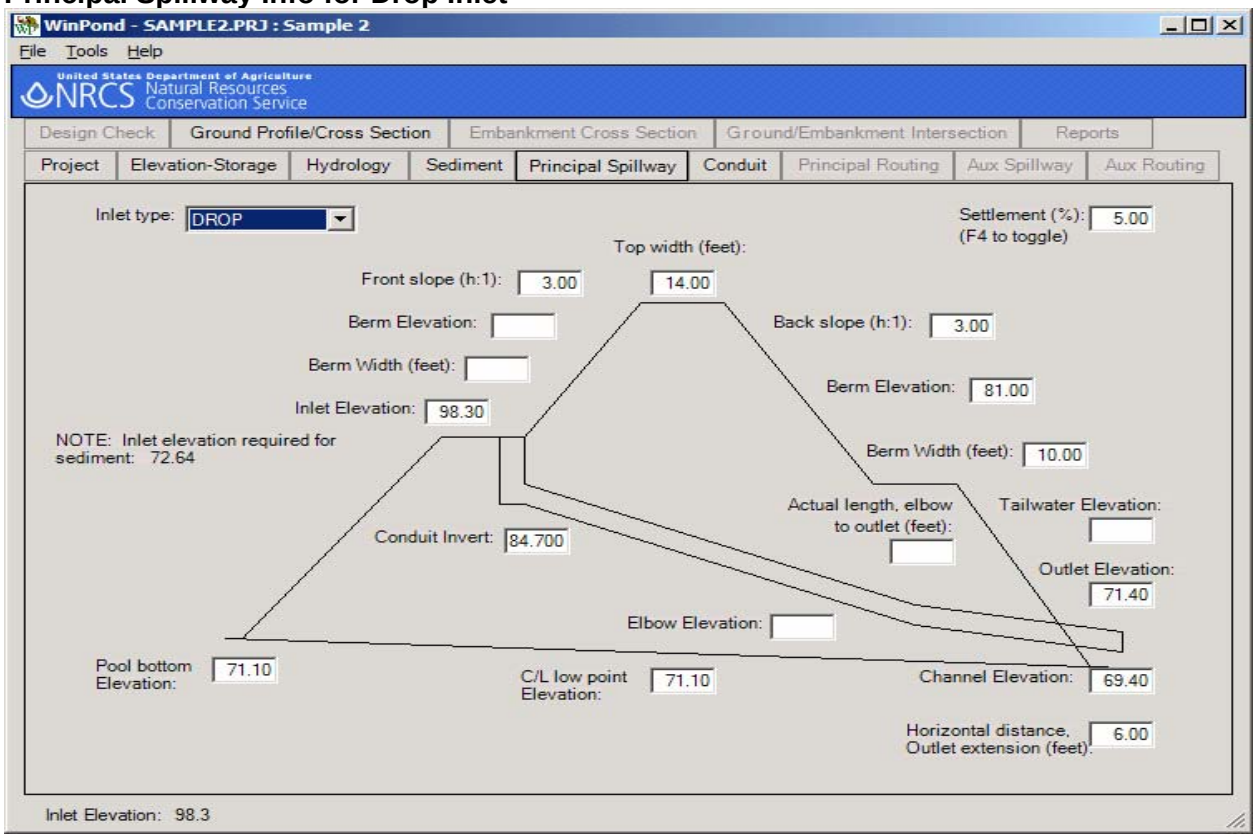
Figure 8. Principal Spillway Info for a Drop Inlet



Principal Spillway Info for Canopy Inlet



Principal Spillway Info for Drop Inlet



******* Data Entry for Principal Spillway on Tab 5 *******

Display of data elements for the Principal Spillway has been redesigned in WinPond. The data elements displayed on this screen are listed in tab sequence order. After the selection of Inlet Type press the **Tab key** to access the next data element in the tab sequence. From Inlet Type to Downstream Berm Width on this screen there are 19 tab locations.

1. **Inlet Type** — From the choice list select one of the following:

   Choice list
   - Canopy
   - Hood
   - Drop
   - Box Canopy
   - Box Hood
   - User Inlet

2. **Settlement (%)/Overfill (feet)**

   Percent of Settlement that can be expected to occur or

the Overfill amount in feet that you plan to use.

Percent of Settlement is computed as follows:

%S = 100* (Ec - Es) / (Es - Elow)

where: %S = Percent settlement
Ec = Constructed elevation
Es = Settled elevation
Elow = Centerline low point elevation

3. **Top width (feet)**
Required data
Top width of the dam in feet. This width is used in estimating the length of the conduit.

4. **Front slope (h:1)**
Required data
Front (upstream) slope as a ratio of horizontal to vertical distance, e.g., for a 2:1 slope, enter 2.

5. **Upstream Berm Elevation**
Elevation of an upstream berm. When there is no berm, leave this field blank.

6. **Upstream Berm Width (feet)**
Width of an upstream berm. When there is no berm, leave this field blank.

7. **Inlet Elevation**
Required data
Elevation of principal spillway inlet. This value should be the Invert of the conduit for a canopy or hood inlet or the top of the riser for a drop or box inlet.

Sediment Note: Inlet elevation required for sediment: nn.nn

To allow for Sediment storage entered on the Sediment Tab (T4), the value of Inlet Elevation should be changed in the input box to be equal or greater than Inlet elevation displayed in the Sediment Note. Data entered in the Input Elevation input box will override any value previously entered there.

8. **Conduit Invert ***
Required data
Elevation of the conduit coming into the riser for drop and and box inlets. This data entry box is displayed only for drop or box inlets. This required elevation value should fall within a range

from
Inlet elevation - (2 X Conduit Diameter)
to
Pool bottom

9. **Elbow Elevation**
When the conduit has an elbow, enter the elevation of the

invert of the elbow. Also enter a value for elbow to outlet length. When there is no elbow, leave this field blank.

10. **Actual length, elbow to outlet (feet)**

Length in feet of the conduit from the elbow to the end of the conduit. When a value is entered here, be sure to enter an **Elbow elevation**. When there is no elbow, enter 0 (zero) or leave this field blank.

11. **Outlet Elevation**

Required data

Elevation of the outlet. This value should be the invert of the conduit.

12. **Horizontal distance, Outlet extension (feet)**

Required data

Horizontal distance in feet that the outlet extends beyond the downstream toe.

13. **Pool bottom Elevation**

Required data

Elevation of the pool bottom. This elevation is used to estimate storage volume if the area of the first line in the stage-storage table is not zero.

14. **C/L low point Elevation**

Required data

Elevation of the low point in channel at the centerline of the dam.

15. **Channel Elevation**

Required data

Elevation at the downstream toe of the embankment at the principal spillway location. This value is used in determining conduit length and overall height.

16. **Tailwater Elevation**

When there is any tailwater over the outlet, enter the elevation here. When there is no tailwater, leave this field blank.

17. **Back slope (h:1)**

Required data

Back (downstream) slope as a ratio of horizontal to vertical distance, e.g., for a 2:1 slope, enter 2.

18 **Downstream Berm Elevation**

Elevation of a downstream berm. When there is no berm, leave this field blank.

19. **Downstream Berm Width (feet)**

Width of a downstream berm. When there is no berm,

leave this field blank.

******* Status Bar Message Line at bottom of window *******

Data Element Source of value

1. Inlet Elevation - Data entered on Principal Spillway Tab - T5

Note: To view the Status Bar Message line at the bottom of the window,
1. The screen resolution must be set to 1024 x 768 pixels or higher OR
2. If the screen resolution is set to 800 x 600 pixels,
   set the screen to Auto Hide the task bar:
   Click: Start\Settings\Task Bar & Start Menu\ Auto hide.
   The task bar display will appear and disappear depending on the location of the mouse on the task bar.
   Click: The maximize button on the title bar to the left of the "X" in the upper right corner of the title bar to display the message.

F Conduit -- T6 01/27/2005

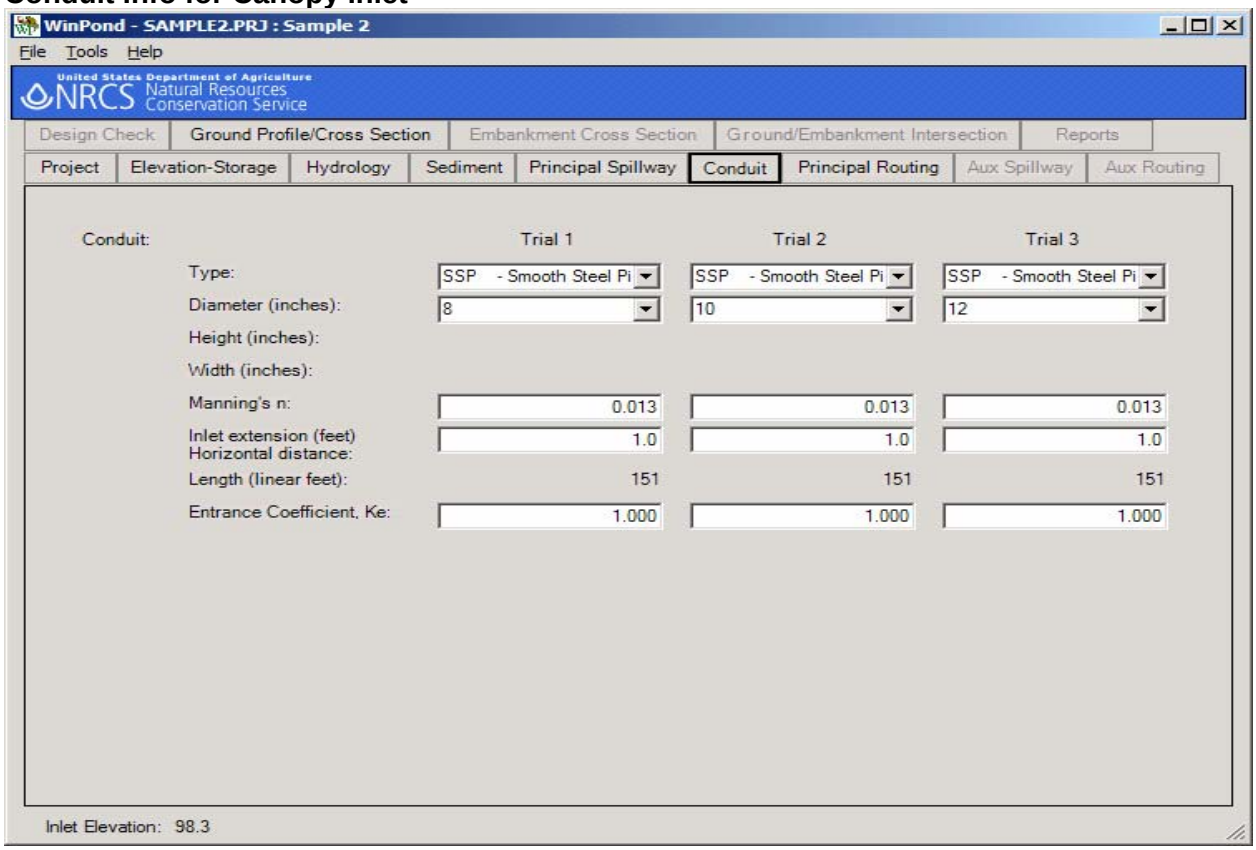
Up to three trials of conduit can be defined on the Conduit information tab. To remove a Conduit trial, highlight Conduit Type and then press the Backspace key. Only those Conduit trials with Conduit Type will be tested by WinPond.

Conduit trials can be used to test design variables for adjusting the dam height. These design variables are related to availability of materials for inlet type, conduit diameter and length, and related cost.

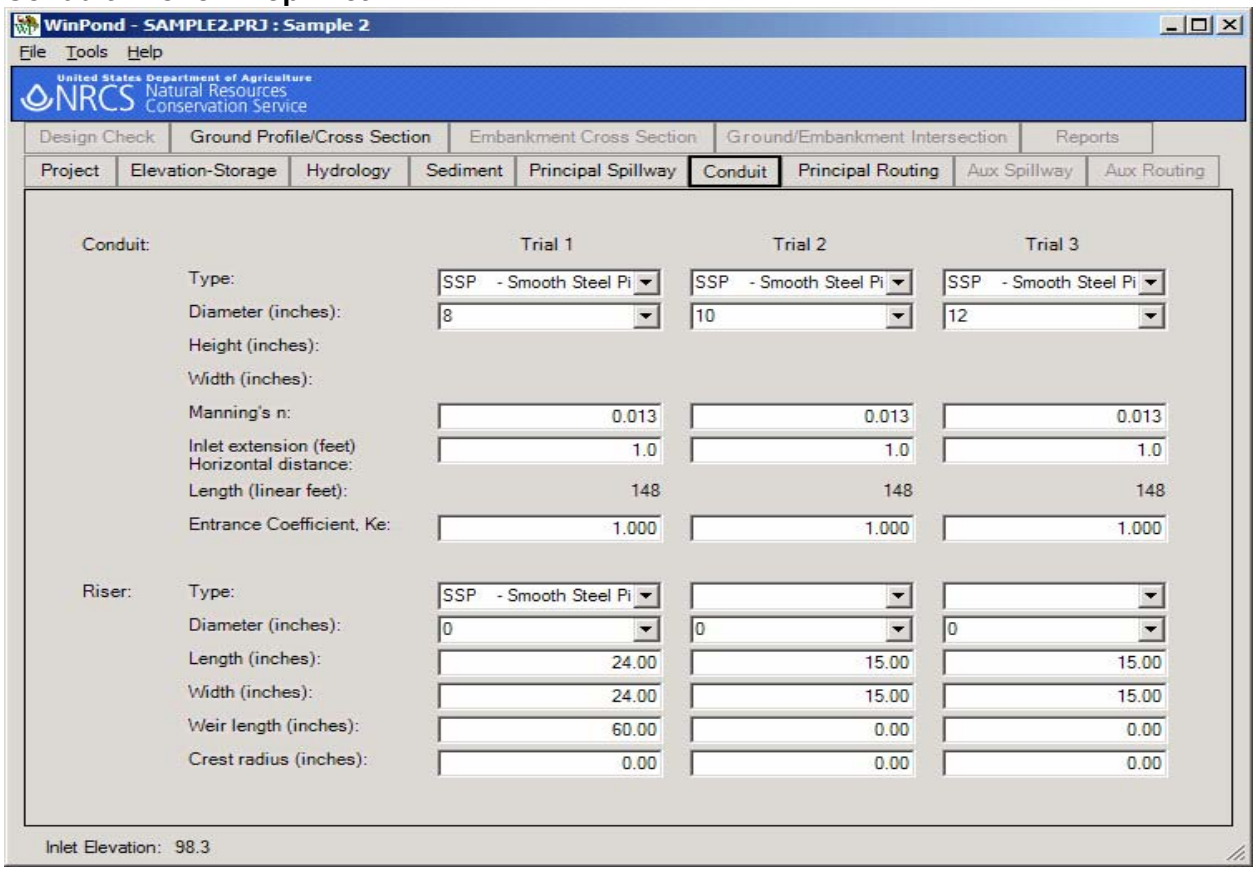
Riser data entry is provided for Drop, Box Canopy or Box Hood Inlet Type conduits that have been selected on the Principal Spillway tab.

When present, the riser is structurally connected to the conduit. In WinPond the conduit data does not determine the riser data. Therefore, when the conduit data is adjusted, the user should also adjust the riser data when applicable.

Conduit Info for Canopy Inlet



Conduit Info for Drop Inlet



******* WinPond Trials for Pipe Flow Routing *******

On the Conduit Tab -T6, enter conduit data in Trials 1 to 3.

On the Principal Routing Tab - T7, the selected Trial is tested to determine whether the water will flow through the Principal Spillway. This flow test is made before the data are displayed on the Principal Routing tab.

The small **WinPond P.S. Storm Info** window is displayed over the Principal Routing tab when WinPond has perfomed one of the following actions:

1. Computed a pipe flow routing test
2. Provided a reason for flow control
3. Made a change to Inlet elevation
4. Encountered an error in the Principal Spillway routing

When a Principal Routing error has been found, WinPond will return the user to the Conduit Tab so that the user can fix the error. This error can be fixed:

On the **Conduit Tab** by adjusting the conduit diameter or height/width, or when present adjusting the riser diameter or height/width, OR

On the **Principal Spillway Tab** by adjusting any of the elevations.

WinPond will not allow the user to proceed to the Auxiliary Spillway Tab, T8 until this error has been fixed. This error routine will prevent data with errors from being included in your WinPond design.

After the Principal routing has been determined to be valid on the Principal Routing Tab - T7, in the **Trial to use for routing auxiliary** box, select a number from 1 to 3 from the choice list. This trial number will identify a Trial from 1 to 3 corresponding to the Trial data entered on the Conduit Tab. The Trial number entered specifies the Auxiliary Spillway Trial to be tested.

Values on the Auxiliary Spillway Tab - T8, reflect the Auxiliary Spillway Trial being tested.

On the Auxiliary Routing Tab - T9 a small WinPond Alert window, a warning message, is displayed when minimum slope is greater than maximum slope on the Auxiliary Routing Tab.

******* Data Entry for Conduit data on Tab 6 *******

1. **Type**
   Choice list

Select one of the following:
ACMP - Annular Corrugated Metal Pipe
HCMP - Helical Corrugated Metal Pipe
RC - Reinforced Concrete
S40-PVC - PVC Schedule 40 Pipe
S80-PVC - PVC Schedule 80 Pipe
SDR-26 - PVC SDR-26 Pipe
SSP - Smooth Steel Pipe
USER - User defined

NOTE: To delete a conduit trial enter blanks in Conduit type.

2. **Diameter (inch)**
   Round pipe
   Required data

Diameter of conduit in inches. Select Diameter from the choice list. Choices on this choice list change depending on the value used for Conduit Type. If this diameter is found in the conduit data file and the associated flow area is not zero, the flow area given is used. Otherwise, the diameter entered is assumed to be an inside diameter. If the conduit is rectangular, enter zero for the diameter.

Enter the following data in the trial table where applicable:

3. **Height (inch)**
   Width (inch)
   Rectangular conduit

For a rectangular conduit, inside dimensions of height and width in inches. Displays whenever the diameter is blank or zero regardless of the conduit type selected.

4. **Manning's n**

Manning's n value for the conduit. This value is used in computing a friction loss factor. When the conduit

entered was found in the conduit pipe data file, the n value from the data file will be entered in this field.

5. **Inlet extension (feet)**
Horizontal distance:
Entered Data

Canopy and Hood Inlets
For canopy and hood inlets, this value is the horizontal distance in feet. The conduit extends from the dam on the upstream side. This value does not include the canopy or hood length.

Drop or Box Inlets
For a drop or box inlet, this value is the horizontal distance to the top of the riser, i.e., the edge nearest the dam centerline on the upstream slope of the dam at the

inlet elevation.

Refer to Figure 7. Principal Spillway Info for Canopy Inlet, and Figure 8. Principal Spillway Info for a Drop Inlet for a diagram of these dimensions. These diagrams display the values requested for a canopy inlet and a drop inlet. See these diagrams in Principal Spillway Tab, T5 help.

6. **Length (linear feet)**
Calculated data

Total length of conduit in feet. This value is the actual length (not horizontal) and includes the inlet and outlet extensions and the canopy length. This value does not

include the riser length, if any. The calculated length is displayed and cannot be changed.

7. **Entrance Coefficient, Ke**

Entrance Loss Coefficient entered here should not include bending losses due to an elbow or friction losses.

8. **Riser Type**

Riser data entry is **required for Conduit Info for Drop**

Choice list

Inlet, Box Canopy Inlet, or Box Hood Inlet Type, entered on the Principal Spillway tab.

The choices for Riser are the same choices shown under Conduit Type including:

ACMP - Annular Corrugated Metal Pipe
HCMP - Helical Corrugated Metal Pipe
RC - Reinforced Concrete
S40-PVC - PVC Schedule 40 Pipe
S80-PVC - PVC Schedule 80 Pipe
SDR-26 - PVC SDR-26 Pipe

SSP - Smooth Steel Pipe
USER -User Defined

9. **Riser Diameter (inch)**
Required data

Diameter of the riser in inches. When this diameter is found in the conduit data file and the associated flow area is not equal to zero, the flow area given is used. Otherwise, the diameter entered is assumed to be an inside diameter. If the riser is rectangular, enter zero for the diameter.

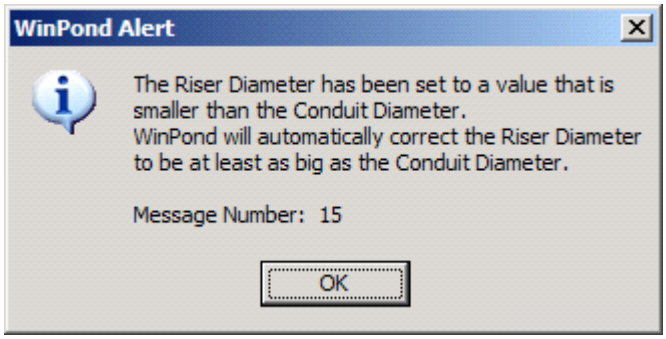
Riser Diameter should default to
1 ½ x Conduit area

for example, If a Conduit selected is

SSP - Smooth Steellpipe
Diameter = 14"

The Riser (default) = 18"

When Riser Diameter is **smaller** than the Conduit Diameter the following error message will appear:



10. **Length (inch)**
Width (inch)

For a rectangular riser, enter the inside dimensions of length and width in inches. Displays whenever the diameter is blank or zero regardless of the conduit type selected.

11. **Weir length (inch)**

Calculated data

Weir length for the top of the riser. This value will be calculated as follows:

Circular:
weir length = pi x inside diameter

Rectangular:
weir length = 2 x (length + width)

This weir length calculated value can be replaced.

12. **Crest radius (inch)** The corner radius for the weir portion of the riser in
Entered data inches. Enter a zero for a sharp edge corner.

******* Status Bar Message Line at bottom of window *******

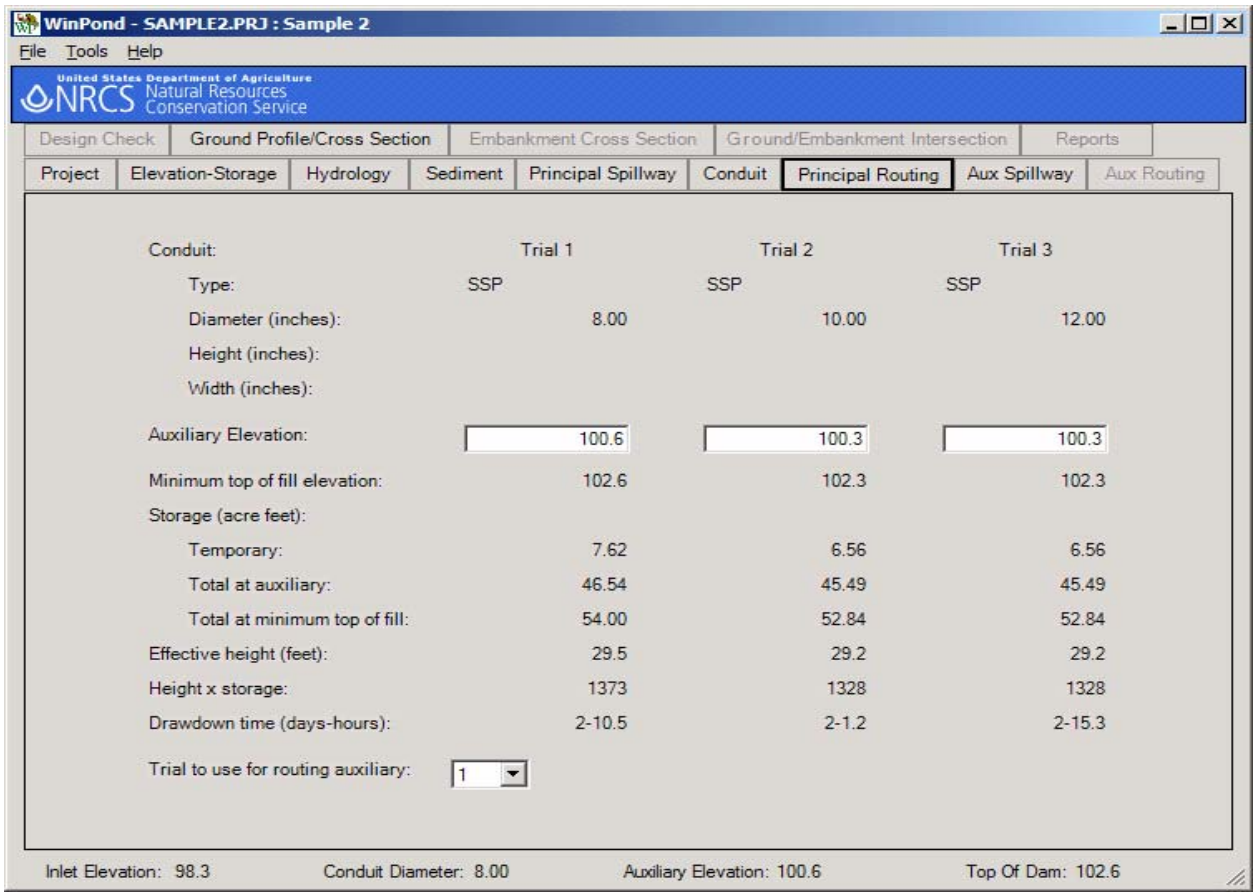
Data Element Source of value

1. Inlet Elevation - Data entered on Principal Spillway Tab - T5

G Principal Routing -- T7 01/27/2005

When Conduit data is supplied for 1-3 trials, Principal Spillway Routing trials can be run. The routing results will be displayed on the Principal Spillway Routing Screen.

The Principal Spillway Routing Screen allows you to change the Auxiliary Elevation and to select the trial (1-3) that you want to use for routing auxiliary.

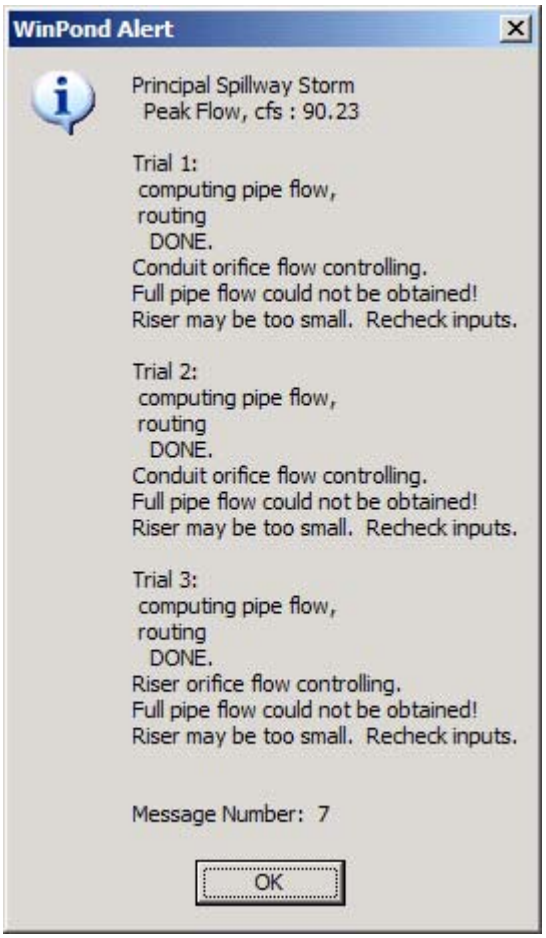


******* WinPond Alert Message 7 *******

On entry to the Principal Routing Tab (T7) Message Number 7 will always appear. This message describes the status of the Principal Routing that is taking place for each conduit and riser pipe selected on the Conduit Tab (T6). For a trial grouping beginning with "Trial" and ending just before the next trial, if 1-3 , messages appear after "DONE", passage through to the next tabs will not be allowed.

Until a trial with the message(s) has been fixed or removed, passage through to the next tabs will not be allowed.

To remove a trial, highlight and backspace the Conduit Type on the Conduit tab (T6). For a more detailed description of WinPond Alert Message 7 go to part W Warning and Error Messages.



******* WinPond Trials for Pipe Flow Routing *******
On the Conduit Tab -T6, enter conduit data in Trials 1 to 3.

On the Principal Routing Tab - T7, the selected Trials are tested to determine whether the water will flow through the Principal Spillway. This flow test is made before the data are displayed on the Principal Routing tab.

The small **WinPond P.S. Storm Info** window is displayed over the Principal Routing tab when WinPond has performed one of the following actions:

1. Computed a pipe flow routing test
2. Provided a reason for flow control
3. Made a change to Inlet elevation
4. Encountered an error in the Principal Spillway routing

When a Principal Routing error has been found, WinPond will return the user to the Conduit Tab so that the user can fix the error. This error can be fixed:

On the **Conduit Tab** by adjusting the conduit diameter or height/width, or when present adjusting the riser diameter or height/width, OR

On the **Principal Spillway Tab** by adjusting any of the elevations.

WinPond will not allow the user to proceed to the Auxiliary Spillway Tab, T8 until this error has been fixed. This error routine will prevent data with errors from being included in your WinPond design.

After the Principal routing has been determined to be valid on the Principal Routing Tab - T7, in the **Trial to use for routing auxiliary** box, select a number from 1 to 3 from the choice list. This trial number will identify a Trial from 1 to 3 corresponding to the Trial data entered on the Conduit Tab. The Trial number entered specifies the Auxiliary Spillway Trial to be tested

Values on the Auxiliary Spillway Tab - T8, reflect the Auxiliary Spillway Trial being tested.

On the Auxiliary Routing Tab - T9 a small WinPond Alert window, a WinPond Alert message 19, is displayed when minimum slope is greater than maximum slope on the Auxiliary Routing Tab.

******* Data Entry for Principal Routing on Tab 7 *******

Data are displayed on the Principal Routing tab for the three trials entered on the Conduit tab :

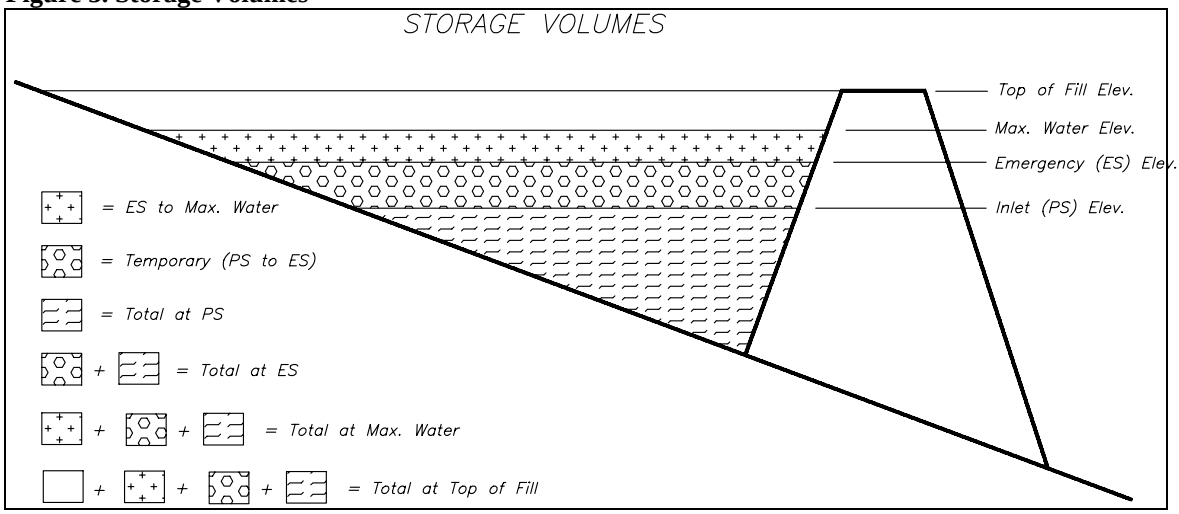
1. **Conduit** — These conduit data were entered on Conduit Tab:
   Type
   Diameter (inches)
   Height Inches)
   Width (inches)

2. **Auxiliary Elevation** — Auxiliary elevation data obtained from routing of the Principal Spillway. This Auxiliary elevation can **only be increased**.
   Calculated data

3. **Minimum top of fill elevation**
   Calculated data — Auxiliary elevation plus the minimum depth of the Auxiliary Spillway (including freeboard). This elevation will not necessarily be the final top of fill elevation which is determined after floodrouting the Auxiliary Spillway.

4. **Storage (acre feet)** — These storage volumes are only as accurate as the elevation-storage data entered. See Figure 3 below. Figure 3 shows the various storage volumes calculated by the WinPond program.
   Calculated data

Figure 3. Storage Volumes



In the Figure 3 diagram of Storage Volumes replace all references to Emergency Spillway (ES) with Auxiliary Spillway (AS).

Temporary — Temporary storage is the amount between the Principal and Auxiliary Spillways.

Total at auxiliary — Storage below the Auxiliary Spillway elevation.

Total at minimum top of fill — Storage below the minimum top of fill elevation.

NOTE: If the first area entered in the stage-storage data is not zero, storage below the first elevation is approximated by taking:

0.4 * (first area) * (first elevation - pool bottom elevation)

5. **Effective height (feet)** — Elevation difference in feet between the Auxiliary Spillway elevation and the lowest ground point along the centerline of the dam.
   Calculated data

6. **Height x storage** — Product of the effective height times the storage below the Auxiliary elevation, i.e., "Total at auxiliary".
   Calculated data

7. **Drawdown time (days-hours)**

Calculated data — Amount of time to discharge the principal spillway storm to a level specified in the default file. See WinPond Default Processing in WinPond Options, Tab Y.

8. **Trial to use for routing auxiliary** — Click the choice list to select which trial of the auxiliary three trials to use for routing the Auxiliary Spillway.

Choice list

NOTE: New Pipe Length on the Design Check Tab (T10) is changed based on the trial specified here. The value of the New Pipe Length used appears on the Conduit Tab (T6) as Length (linear feet) for this trial.

******* Status Bar Message Line at bottom of window *******

Data Element	Source of value
1. Inlet Elevation	**Data entered on Principal Spillway Tab - T5**
2. Conduit Diameter	**- Data entered on Conduit Tab, Trials - T6,** **- Data value selected on Principal Routing Tab, Trial for Routing auxiliary - T7**
3. Auxiliary Elevation	**Data calculated or entered on Principal Routing Tab - T7**
4. Top of Dam = Minimum top of fill elevation	**- Value calculated on Principal Routing Tab - T7** **- Value calculated = Auxiliary Elevation + Auxiliary Spillway to top of dam** **- Auxiliary Spillway to top of dam value from Options - Auxiliary Spillway.**

H Auxiliary Spillway -- T8 02/02/2005

After the Principal routing has been determined to be valid on the Principal Routing Tab - T7, in the **Trial to use for routing auxiliary** box, select a number from 1 to 3 from the choice list. This trial number will identify a Trial from 1 to 3 corresponding to the Trial data entered on the Conduit Tab. This Trial number entered specifies the Auxiliary Spillway Trial to be tested

Values on the Auxiliary Spillway Tab - T8, reflect the Auxiliary Spillway Trial being tested.

On the Auxiliary Routing Tab - T9 a small WinPond Alert window, a warning message, is displayed when minimum slope is greater than maximum slope on the Auxiliary Routing Tab.

******* WinPond Trials for Pipe Flow Routing *******
On the Conduit Tab -T6, enter conduit data in Trials 1 to 3.

On the Principal Routing Tab - T7, the selected Trials are tested to determine whether the water will flow through the Principal Spillway. This flow test is made before the data are displayed on the Principal Routing tab.

The small **WinPond P.S. Storm Info** window is displayed over the Principal Routing tab when WinPond has perfomed one of the following actions:

1. Computed a pipe flow routing test
2. Provided a reason for flow control
3. Made a change to Inlet elevation
4. Encountered an error in the Principal Spillway routing

When a Principal Routing error has been found, WinPond will return the user to the Conduit Tab so that the user can fix the error. This error can be fixed:

On the **Conduit Tab** by adjusting the conduit diameter or height/width, or when present adjusting the riser diameter or height/width, OR

On the **Principal Spillway Tab** by adjusting any of the elevations.

WinPond will not allow the user to proceed to the Auxiliary Spillway Tab, T8 until this error has been fixed. This error routine will prevent data with errors from being included in your WinPond design.

******* WinPond Trials for Pipe Flow Routing on Auxiliary Spillway Tab *******
Before an auxiliary storm can be routed, the Auxiliary spillway needs to be defined. Auxiliary Spillway methods of discharge include:

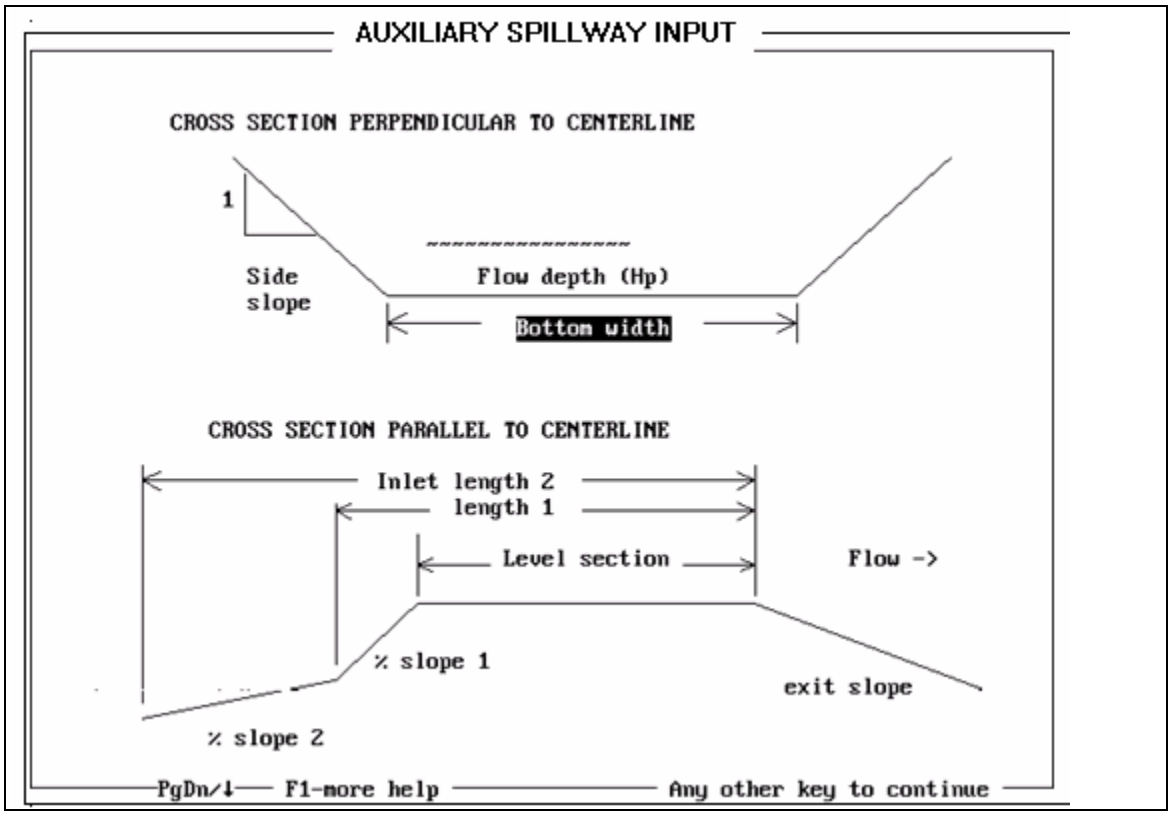
Calculated
Qe values from ASFile,
(User defined stage-discharge)
No auxiliary spillway

An Auxiliary Spillway screen with one those methods selected will be displayed.

The diagram below displays Auxiliary Spillway Dimensions. This diagram is the sketch of Emergency Spillway Input Help.
For identification of dimensions needed for Auxiliary spillways, see Auxiliary Spillway Dimensions in the diagram below. These Auxiliary Spillway Dimensions are used in the WinPond program.

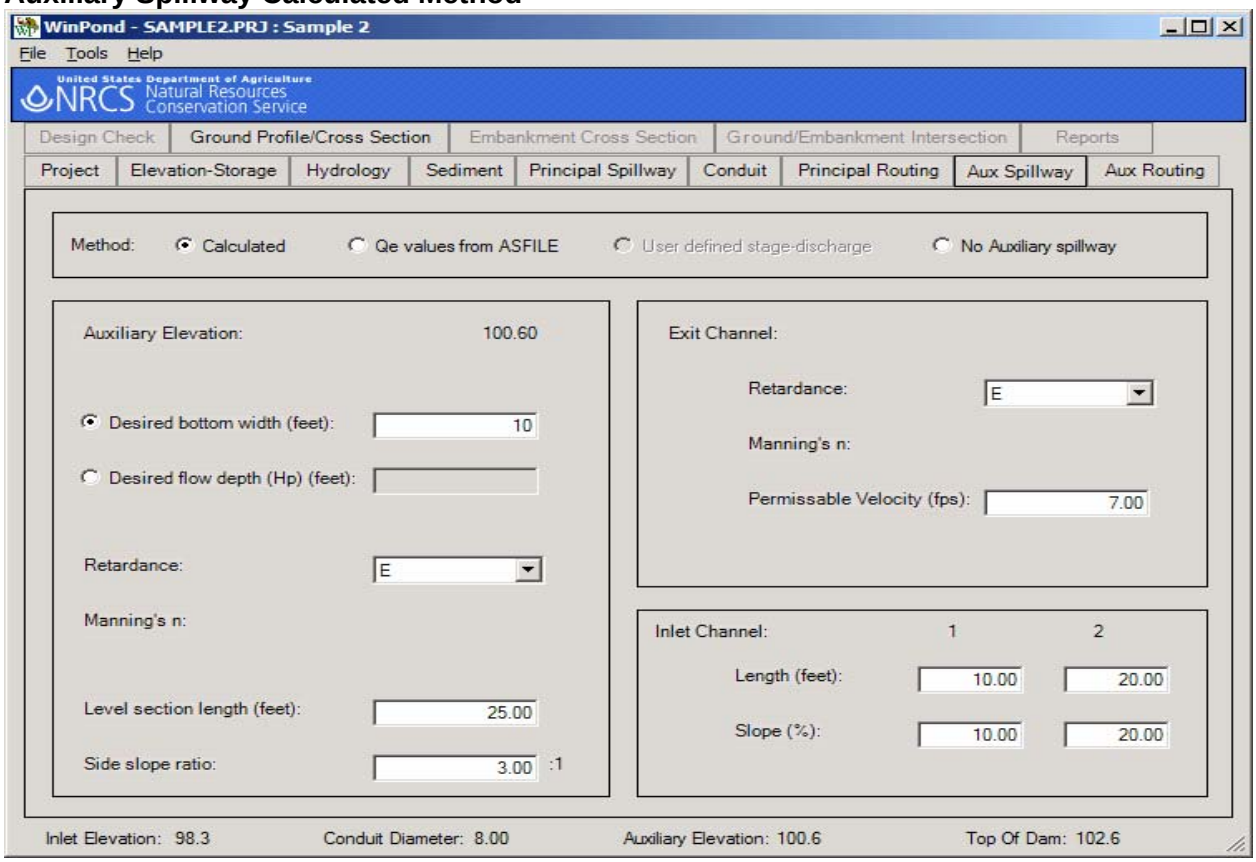
For the Calculated method on the diagram shown below, Inlet length 1 and %slope 1 refer to the Inlet Channel 1 (at lower right corner) on the Auxiliary tab. Inlet length 2 and %slope 2 refer to the Inlet Channel 2 (at lower right corner) on the Auxiliary tab.

Diagram of Auxiliary Spillway Dimensions

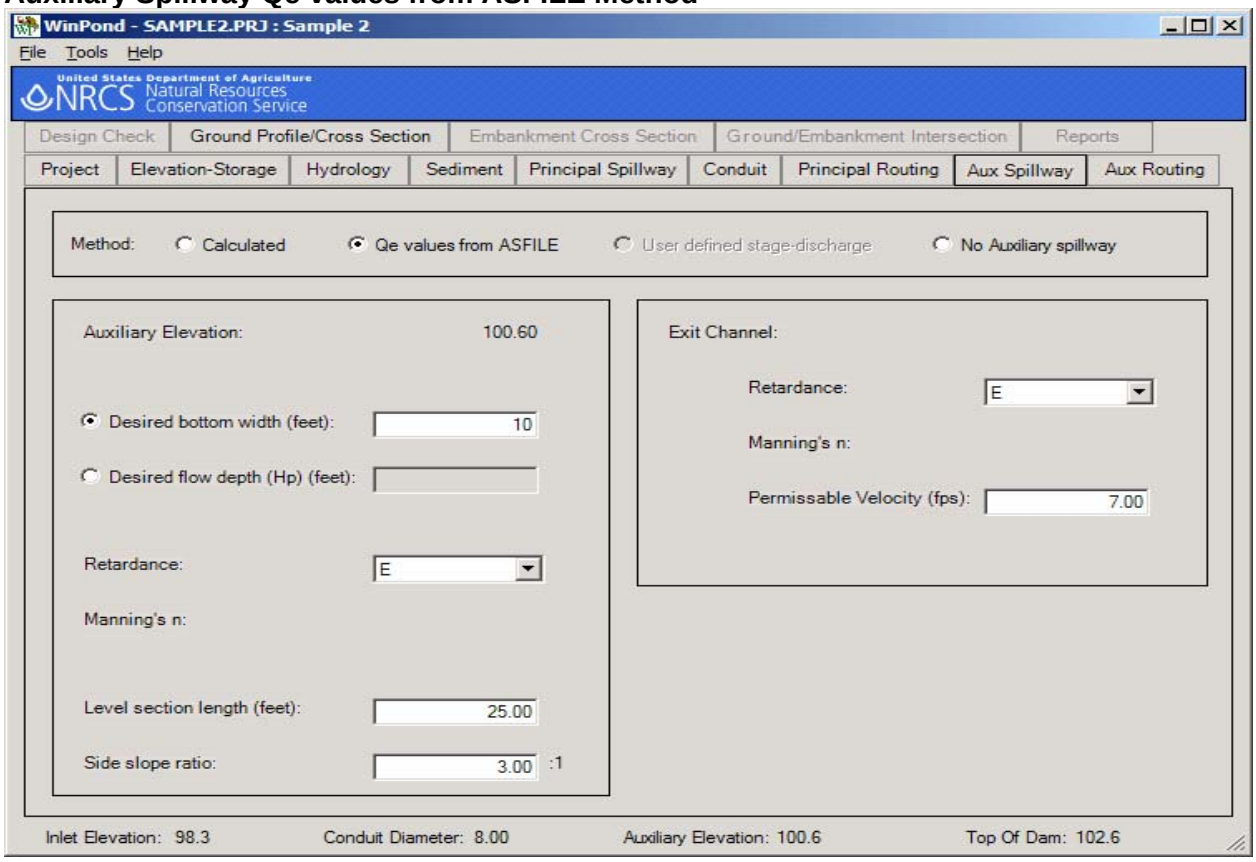


Auxiliary Spillway data entry screens for Calculated Method and Qe values from ASFILE Method are displayed below. Calculated method includes Inlet Channel data.

Auxiliary Spillway Calculated Method



Auxiliary Spillway Qe values from ASFILE Method



******* Data Entry for Auxiliary Spillway on Tab 8 *******

Select a method for computing auxiliary spillway discharge.

To select Auxiliary Spillway method, click on one of the following radio (round) buttons:

a. **Calculated** Discharge will be calculated using the same procedure that is used in the SITES (DAMS2) program. When the Calculated method of Discharge is selected the data entry screen for the calculated method is displayed with Inlet Channel data.

b. **Qe values from ASFILE** Qe (flow/ft. of bottom width) values will be read from the file ASFILE using the same format that is used in the SITES (DAMS2) program. Inlet Channel will not be displayed.

NOTE: When the message, "Configuration not found in ASFILE", is displayed, WinPond will return the user to the Auxiliary

Spillway tab.

c. User defined stage-discharge (To be added in a future release)
A user defined file containing stage-discharge data will be read. The first line of this user defined file should contain a description. The following lines should each contain a stage value (ft.) and a discharge (cfs) separated by a space.

d. **No auxiliary spillway** An Auxiliary Spillway will not be routed.
A warning message may appear depending on the size of the Principal Spillway.

Data entry on the Auxiliary Spillway tab, T8 occurs in the following sequence:

1. **Auxiliary elevation** Auxiliary elevation is repeated from the Principal Spillway Routing screen.

2. **Desired bottom width (feet)**
Bottom width (in feet) of the Auxiliary Spillway control section, i.e., the level section. If you want to enter the depth instead, enter a zero here.

3. **Desired flow depth (Hp) (feet)**
Hp depth (in feet) for the Auxiliary Spillway. This value is the maximum pool elevation minus the auxiliary elevation.
NOTE: Because the routing procedure must iterate

to find the desired depth, the routing will take longer than entering a bottom width.

4. **Retardance**
Choice list
From the choice list select a vegetated retardance equal to A, B, C, D or E for the control section. When the Calculated method of discharge was chosen, and you want to enter a Manning's n value instead, leave this field blank.

5. **Manning's n** A Manning's n can be entered for the control section when the Calculated method of discharge was chosen.

6. **Level section length (feet)**
Length (in the direction of flow) of the level section in feet.

7. **Side slope ratio** Side slope of the level section is entered as the ratio of horizontal to vertical distance. For 3:1 slopes, enter 3.

Exit Channel

8. **Retardance** Choice list	From the choice list select a vegetated retardance of A, B, C, D, or E for the exit channel. To enter a Manning's n value instead, leave this field blank.
9. **Manning's n**	Manning's n value for the exit channel.
10. **Permissible Vel., fps**	Maximum permissible velocity (feet/second) for the exit channel. This value is used in determining maximum exit slope.

Inlet Channel (Auxiliary Spillway)

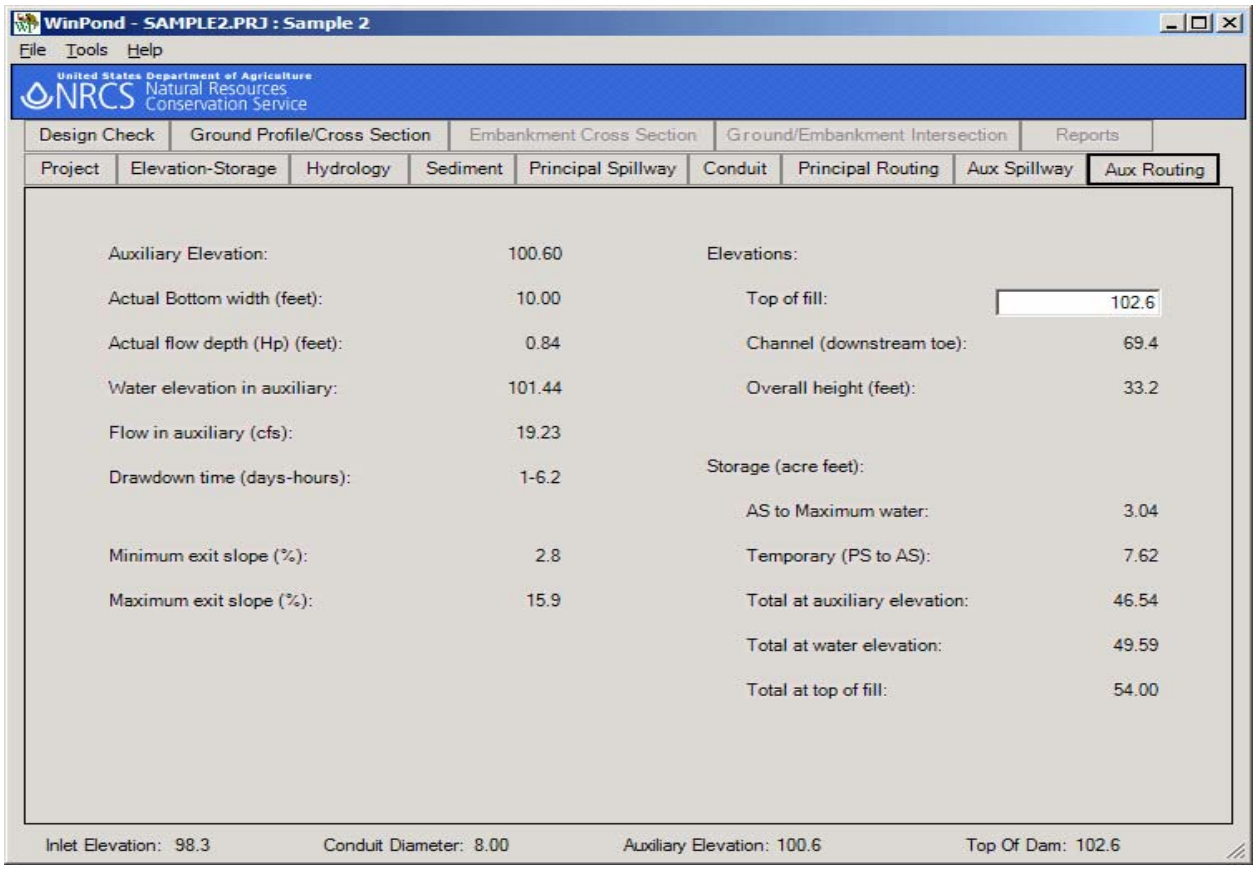
When the Calculated method of discharge was chosen, the inlet channel shape for the auxiliary spillway can be defined:

11. Length (feet)	Horizontal distance (in feet) upstream from the control section at which a sloping section back into the pool begins. This distance includes the level section length. If there are two slopes, a second length can be entered.
12. **Slope %**	Slope (in percent) of a sloping section back into the pool. If there are two slopes, the slope of the second section should also be entered.

******* Status Bar Message Line at bottom of window *******

Data Element	**Source of value**
1. Inlet Elevation -	**Data entered on Principal Spillway Tab - T5**
2. Conduit Diameter -	**Data entered on Conduit Tab, Trials - T6,** **- Data value selected on Principal Routing Tab, Trial for Routing auxiliary - T7**
3. Auxiliary Elevation -	**Data calculated or entered on Principal Routing Tab - T7**
4. Top of Dam = Minimum top of fill elevation	**- Value calculated on Principal Routing Tab - T7** **- Value calculated = Auxiliary Elevation + Auxiliary Spillway to top of dam** **- Auxiliary Spillway to top of dam value from Options - Auxiliary Spillway.**

I Auxiliary Routing -- T9 01/27/2005



When WinPond Alert Message 21 appears:

> **Not Enough Water is available to flow through the Auxiliary Spillway (AS).**
> **Warning: Depth is less than or equal to zero feet.**

This message is caused by not allowing enough water to flow through the auxiliary spillway. To eliminate this message, adjust one of the following:

1. Change the value of the Auxiliary elevation to a lower elevation on the Principal Routing tab - T9

OR

2. Increase the value of Frequency (years) for Auxiliary Spillway at the bottom of the Hydrology tab - T3

******* Data Entry for Auxiliary Routing on Tab 9 *******

The Auxiliary Routing tab is a display screen for data entered on previous tabs. Only the Top of fill data entry box allows data entry.

1. **Auxiliary Elevation** Auxiliary elevation is repeated from the Auxiliary Spillway, T8.

2-3. **Actual Bottom width (feet)**
Actual flow depth (Hp) (feet)

If bottom width was entered on the Auxiliary Spillway screen, bottom width will be the same as entered and flow depth will be a calculated value.

If flow depth was entered, bottom width will be calculated and flow depth should match input if it was possible.

4. **Water elevation in auxiliary**

Maximum pool elevation, which is the auxiliary elevation plus flow depth.

5. **Flow in auxiliary (cfs)** Peak flow through the spillway in cubic feet per second.

6. **Drawdown time (days-hours)**

Amount of time to discharge the Auxiliary Spillway storm. If the Principal Spillway used is less than 10 inches in diameter, this time is the drawdown time to the auxiliary elevation, otherwise, this value is the drawdown time to the level specified in the default file

7-8. **Minimum exit slope (%)**
Maximum exit slope (%)

Allowable range of slopes for the Exit channel.

Elevations:

9. **Top of fill** Settled elevation of the top of fill. This value is the greater of the following:

a. Auxiliary elevation plus minimum auxiliary depth, OR
b. Water elevation plus freeboard. Water elevation plus freeboard. This **value can only be increased**; this value cannot be lowered.

10. **Channel (downstream toe)**

Channel elevation is the elevation at the downstream toe of the embankment at the Principal Spillway location. This value is used in determining conduit length and overall height. This value cannot be changed at this location.

11. **Overall height (feet)** Settled top of the fill elevation minus the downstream toe elevation.

Storage (acre feet): Refer to Figure 3 below for a diagram of these storage volumes.

12. **AS to Maximum water** Volume between maximum water and auxiliary elevations.

13. **Temporary (PS to AS)** Volume between principal inlet and auxiliary elevations.

14. **Total at auxiliary elevation**
Volume below the Auxiliary elevation.

15. **Total at water elevation**
Volume below the maximum water elevation.

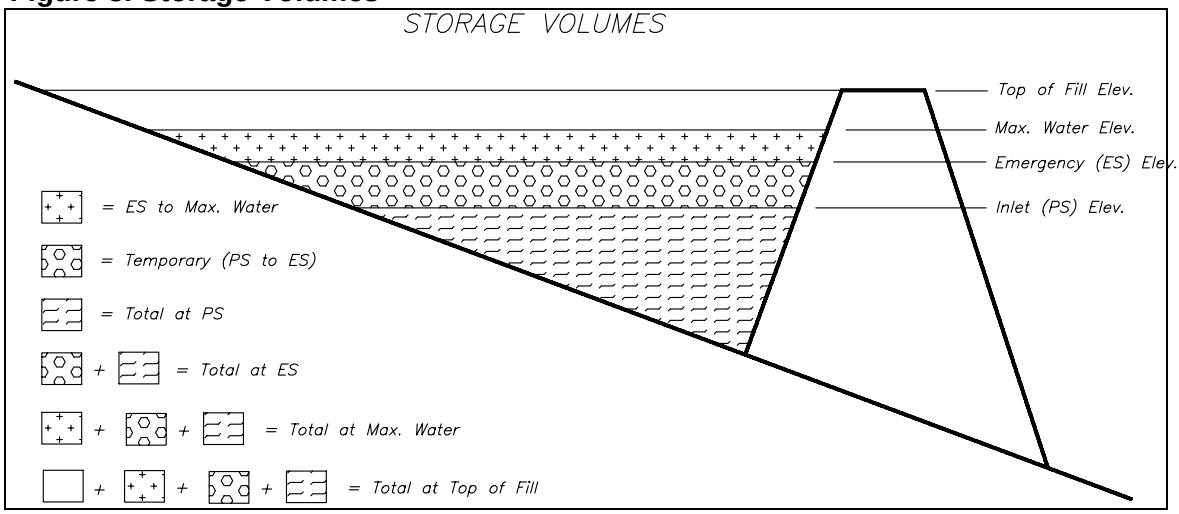
16. **Total at top of fill** Volume below the top of fill elevation.

NOTE: If the first area entered in the stage-storage data is not zero, storage below the first elevation is approximated by taking:

0.4 * (first area) * (first elevation - pool bottom elevation).

Storage Volumes
Figure 3. Storage Volumes shown below displays various storage volumes figured by the WinPond program. In the following Storage Volumes diagram replace all references to Emergency Spillway (ES) with Auxiliary Spillway (AS).

Figure 3. Storage Volumes



******* Status Bar Message Line at bottom of window *******

Data Element Source of value

1. Inlet Elevation - Data entered on Principal Spillway Tab - T5

2. Conduit Diameter - Data entered on Conduit Tab, Trials - T6,

- **Data value selected on Principal Routing Tab, Trial for Routing auxiliary - T7**

3. **Auxiliary Elevation - Data calculated or entered on Principal Routing Tab - T7**

4. **Top of Dam = Minimum top of fill elevation**
   - **Value calculated on Principal Routing Tab - T7**
   - **Value calculated = Auxiliary Elevation + Auxiliary Spillway to top of dam**

   - **Auxiliary Spillway to top of dam value from Options - Auxiliary Spillway.**

J Design Check -- T10 **08/12/2004**

After the auxiliary storm has been routed and the top of fill elevation set, the pipe length is recalculated based on the new top of fill elevation. The pipe length (based on estimated top of fill) used in the design, and the recalculated pipe length are shown on the final design check screen. The variation between the two lengths is computed by the formula:

|(old - new)| / old

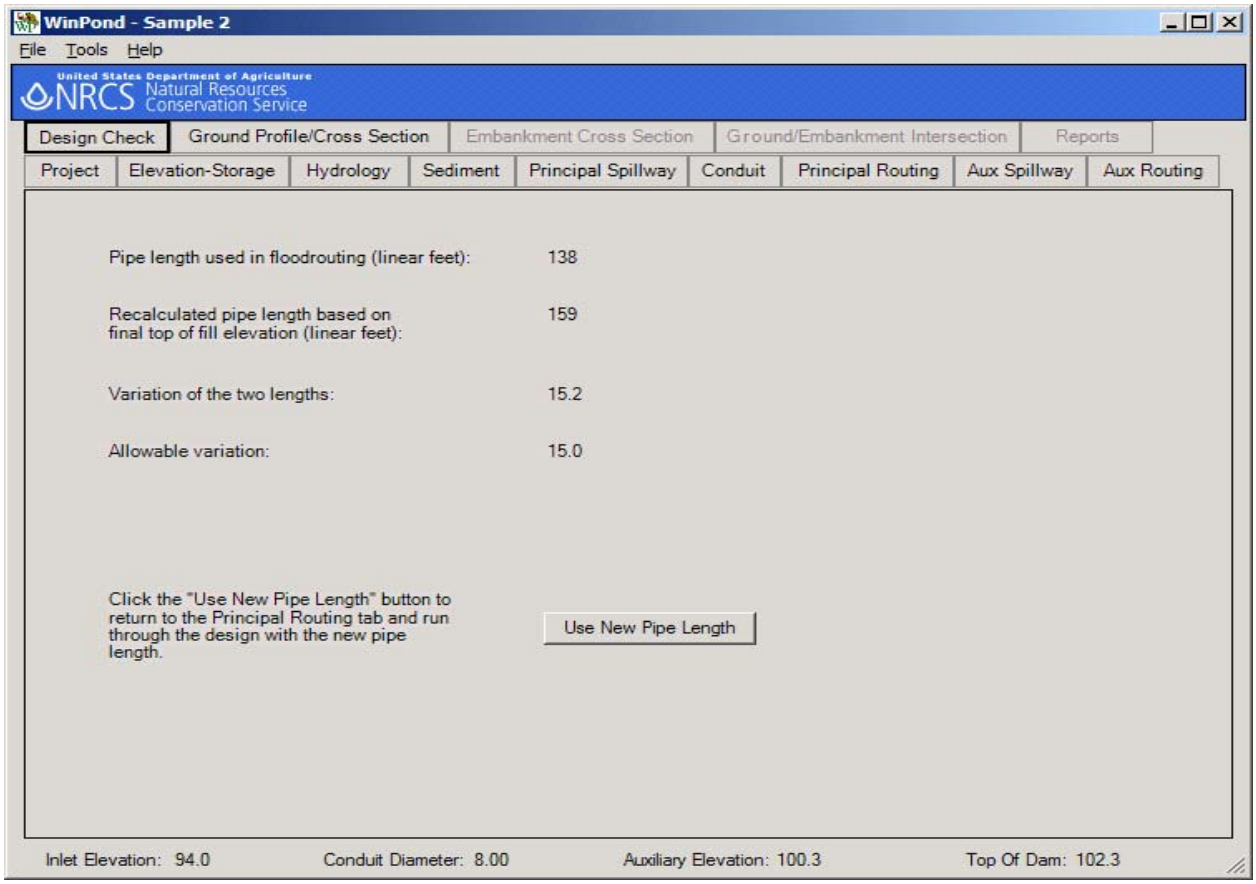
The two pipe lengths are displayed on this tab as:

Pipe length used in floodrouting (linear feet)	nnn
Recalculated pipe length based on final top of fill elevation (linear feet)	nnn

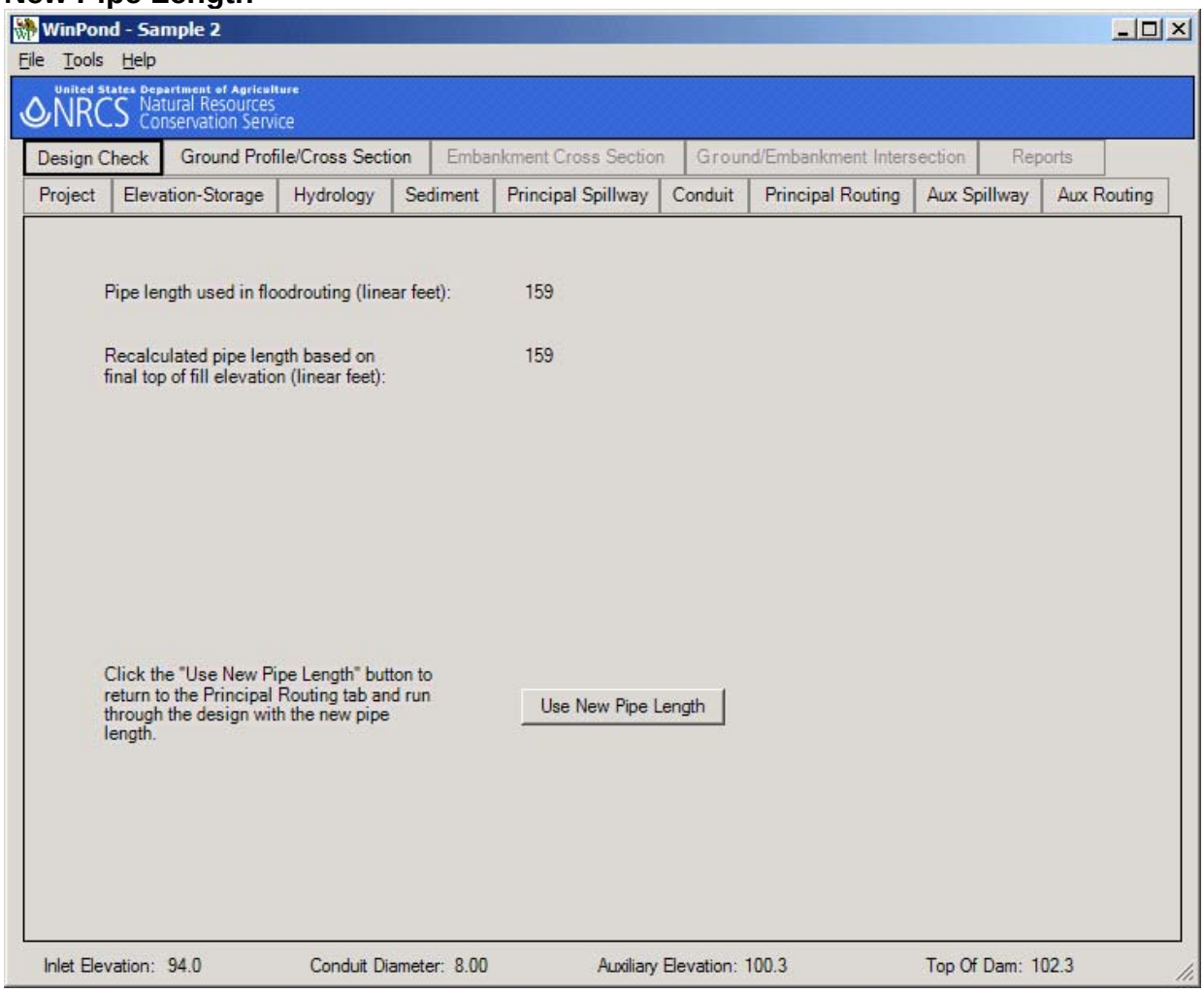
The actual pipe length variation (%) and the allowable variation (15.0%) are displayed on this tab when the actual variation exceeds the allowable variation. These two messages appear as:

Variation of the two lengths	nn.nnnnnnnnnnn
Allowable variation	15.0

When these 2 error messages appear the variation is too large. The user must click on the **Use New Pipe Length** button to correct this large variation. Conduit length is too long; this is a waste of resources.


WinPond - Sample 2
File Tools Help
United States Department of Agriculture
NRCS Natural Resources Conservation Service
Design Check
Ground Profile/Cross Section
Embankment Cross Section
Ground/Embankment Intersection
Reports
Project
Elevation-Storage
Hydrology
Sediment
Principal Spillway
Conduit
Principal Routing
Aux Spillway
Aux Routing
Pipe length used in floodrouting (linear feet): 138
Recalculated pipe length based on final top of fill elevation (linear feet): 159
Variation of the two lengths: 15.2
Allowable variation: 15.0
Click the "Use New Pipe Length" button to return to the Principal Routing tab and run through the design with the new pipe length.
Use New Pipe Length
Inlet Elevation: 94.0
Conduit Diameter: 8.00
Auxiliary Elevation: 100.3
Top Of Dam: 102.3

New Pipe Length



******* Data Entry for Design Check on Tab 10 *******

The Design Check tab is a display screen for data entered on previous tabs. Only the New Pipe Length can be changed on this tab.

When the variation between the two pipe lengths is greater than allowed, the following message will appear:

Variation of the two lengths:	nn.nnnnnnnnnnn
Allowable variation:	15.0

Click on the **New Pipe Length** button to return to the **Principal Spillway Routing Tab** (T7) to run through the design with the new pipe length.

The number of the trial used in the current test is specified on the Principal Routing Tab.

The New Pipe Length value for the current trial is Length (linear feet) displayed on the Conduit Tab (T6).

******* Status Bar Message Line at bottom of window *******

Data Element Source of value

1. Inlet Elevation - Data entered on Principal Spillway Tab - T5

2. Conduit Diameter - Data entered on Conduit Tab, Trials - T6,
- Data value selected on Principal Routing Tab,
Trial for Routing auxiliary - T7

3. Auxiliary Elevation - Data calculated or entered on Principal Routing Tab - T7

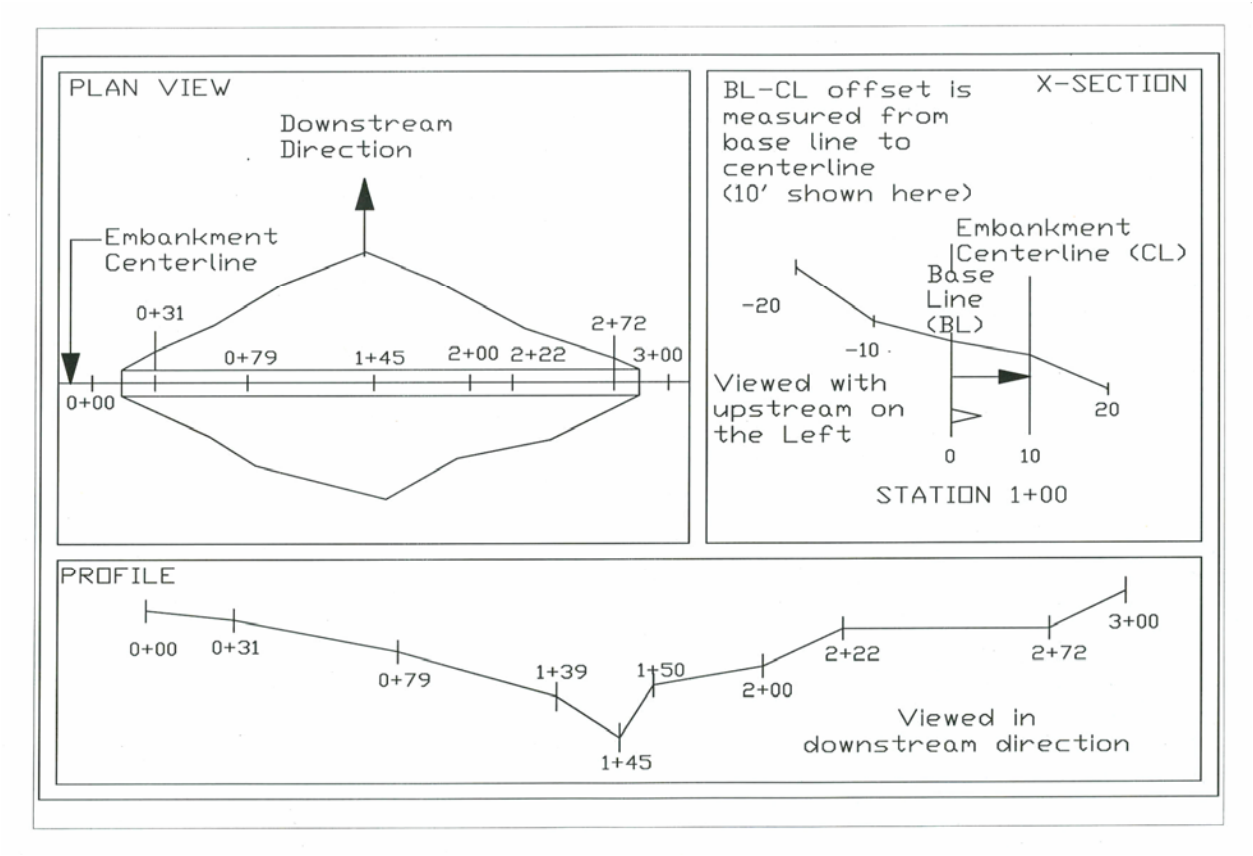
4. Top of Dam = Minimum top of fill elevation
- Value calculated on Principal Routing Tab - T7
- Value calculated =
Auxiliary Elevation + Auxiliary Spillway to top of dam

- Auxiliary Spillway to top of dam value from
Options - Auxiliary Spillway.

K Ground Profile/Cross Section -- T11 05/03/2005

The Ground Profile X-Section Data screen is used to enter the ground data to be used in determining earthwork quantities.

The stationing conventions used in WinPond are illustrated below in Figure 2.

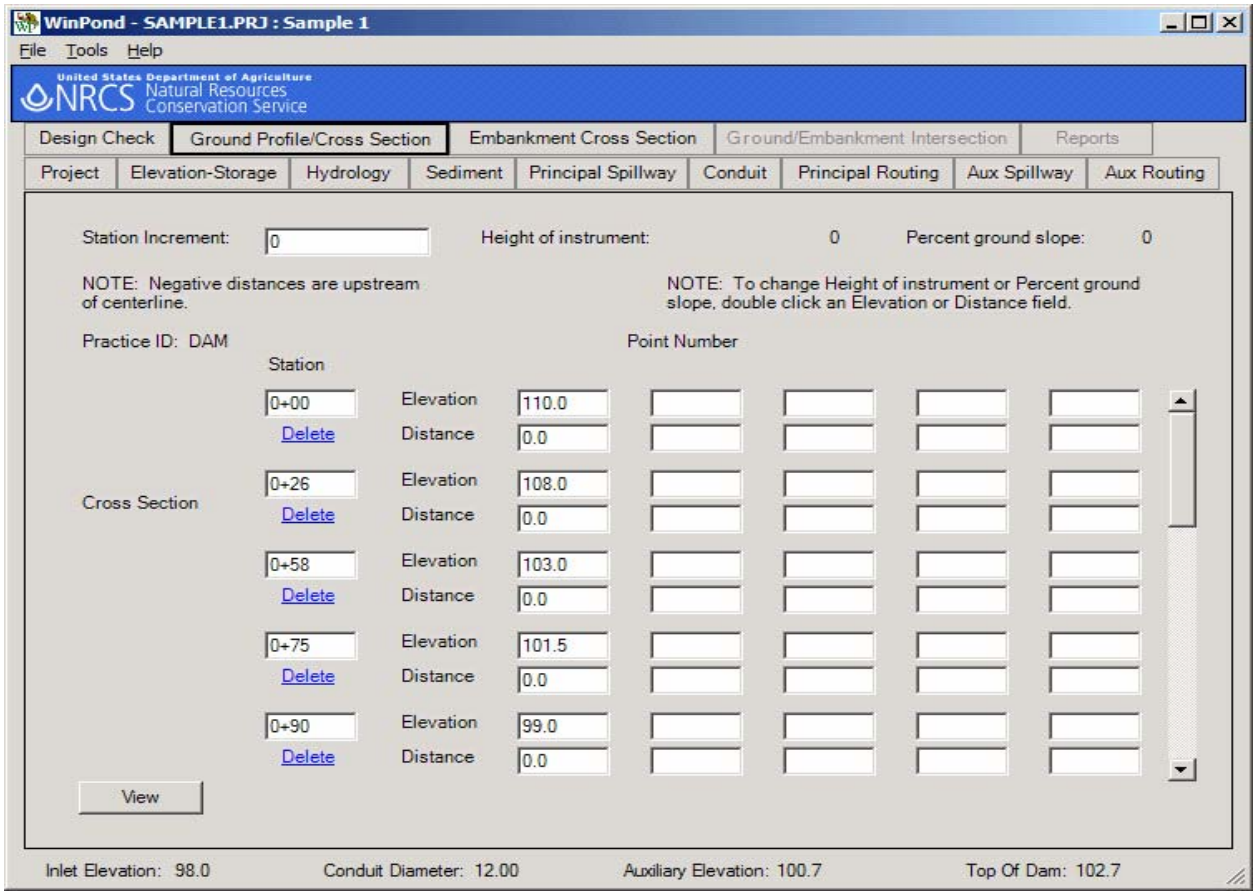


1. In the **Plan View**, the Embankment Centerline Profile must have stations that increase from left to right when looking downstream.

When station numbers are entered in WinPond**, do not enter the plus sign (+), i.e., station 2+50 should be entered as 250. The plus sign (+) will automatically be inserted by the WinPond program.**

Starting at the Embankment Centerline at the edge of the Plan View, enter the first station. From this Station, enter related points on the same row, along a continuum from the Station.

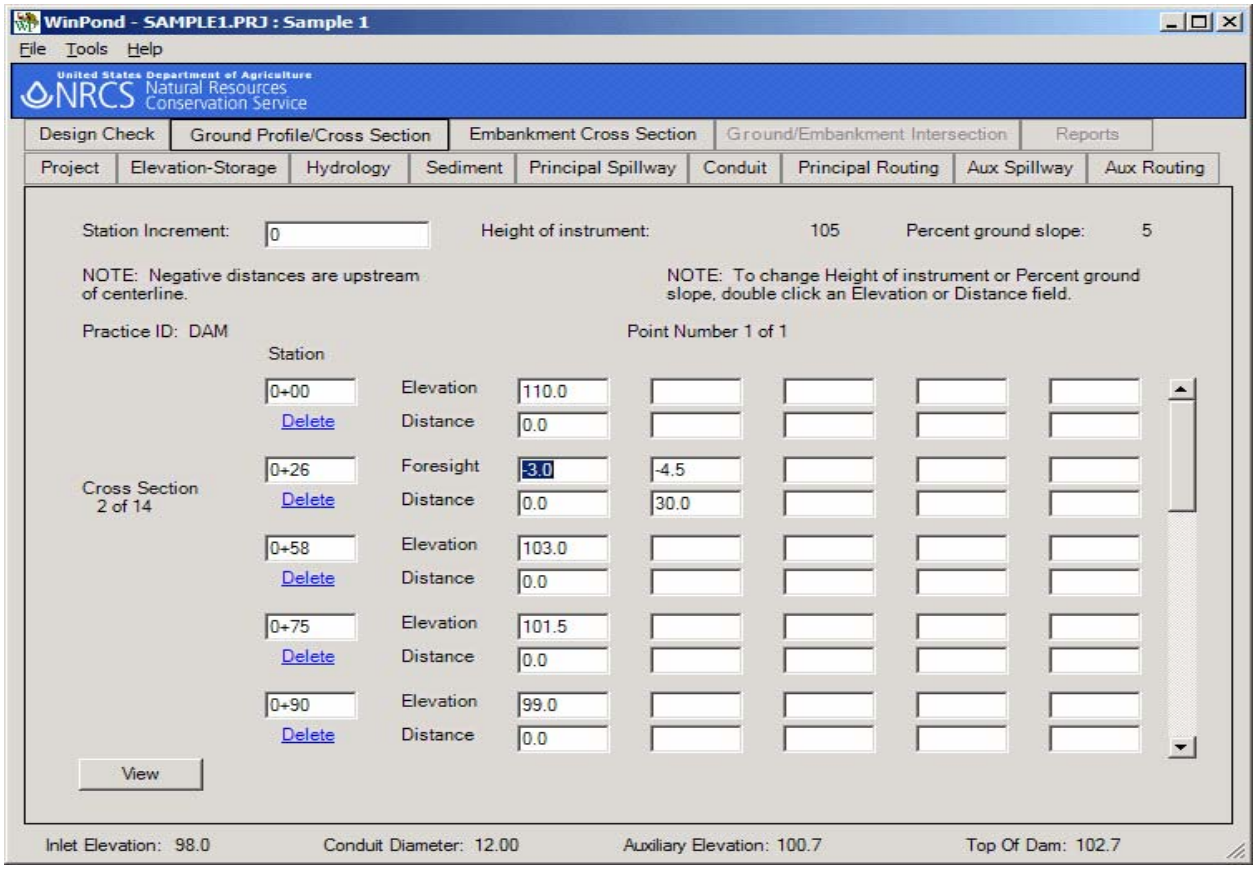
Points are automatically arranged in ascending order at data entry time. Points are usually at varying distances apart to fit the variations in the dam site.



2. Cross sections should be viewed in the direction of decreasing station number with negative (-) values to the left (upstream) and positive values to the right (downstream).

The Baseline (BL) - Embankment Centerline (CL) offset [BL-CL offset] is the horizontal distance from the baseline (flagline) to the centerline.

When looking in the direction of decreasing station, the centerline (CL) is to the right of the baseline (BL). This **offset must be entered as a positive number**, otherwise, the value of the offset will be entered in error as a negative number.



The screen sample above shows five stations with related data.

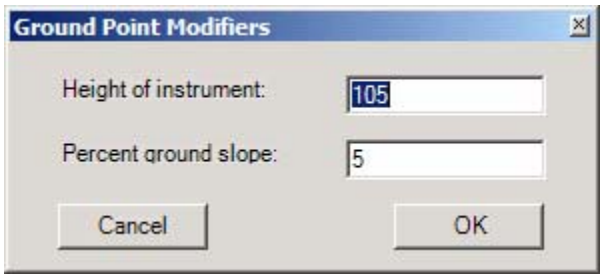
Ground Point Modifiers

1. **Ground Point Modifiers dialog box**.

In the Windows environment the values for Station Increment, Height of Instrument and Percent Ground Slope located at the top of the Ground Profile/Cross Section Tab can be entered/changed using the mouse at anytime.

The value of **Station Increment** can be changed in the Tab 11 data entry box. See Data elements: 1. Station Increment below.

To change the value of either **Height of instrument** or **Percent of ground slope**, double click on either of the **point fields (Elevation or Distance)** in the specific Cross Section row to which this change will apply. A specific cross section row includes a station and related points. When one of the point fields in the specific cross section row is double clicked, a **Ground Point Modifiers** dialog box will be displayed with data entry boxes to receive the change number(s) for Height of instrument and Percent ground slope.



Enter the height of Instrument, e.g., 105.0. When the changed value is acceptable, click on the **OK** button on the dialog box. Otherwise, click the Cancel button. See Data Elements: 2. Height of Instrument below.

When a change has been made in the Ground Point Modifiers dialog box to the **Height of Instrument** value, the specific Cross Section **Elevation** label changes to the **Foresight** label on a cross section row on the Ground Profile/Cross Section tab. The values for Foresite will be displayed. Also, the value(s) appearing next to Height of Instrument or Percent ground slope at the top of the screen will change reflecting the change(s) entered in the dialog box. These values will be displayed only when a row with a Foresite label is highlighted. Height of Instrument applies to that row only and not to rows displaying Elevation.

2. **Enter Station data.** In the Windows environment, data entry of **station data** is free form in WinPond when compared with data entry in the DOS Pond program.

a. Five stations can be viewed at one time.
b. Stations will be placed in ascending sort order by Station Number as they are entered. When data for more than 5 stations is present, a scroll bar will appear on he right side of the window. This scroll bar will enable the user to view more than 5 stations for this dam.
c. The maximum number of stations allowed is 50.

A new station should be entered in the empty row at the end of the list of stations. The stations are placed in ascending order as they are entered. When entering station data, start with the lowest station number, e.g., 0+00 = 0.
A negative station number even when entered at a later time, will be positioned at the beginning of the ascending station number sort sequence.

3. **Enter Point data.** Enter Point data for each Station will appear on the row on the right side of the Station in ascending sort order from left to right by Distance. Each point is identified by Elevation and Distance.

a. Five points attached to each station can be viewed at one time.
When the number of points attached to a station reaches 5, a scroll bar will appear at the bottom of the window. This scroll bar will enable the user to view more than 5 points attached to that station.
b. The value of Point Number, e.g., 1 of 3, indicates the current point location of the cursor on a Station Cross Section data row.
c. The maximum number of points that can be attached to a station is 50.
d. When entering points for a station, start with the lowest Distance number point. When a new point is entered on a station row, this point will automatically be

positioned with existing points in assending sequence from left to right.

e. **On every row, there must be a Distance value = 0.0**. If the view on this tab displays a forked line, one of the station rows lacks a Distance value = 0.0.

******* Data Elements for the Ground Data on Tab 11 *******

1. **Station Increment:**
   Station increment determines what the next station will be in relation to the current last station. This Station Increment will enable the determination of the location of a next new station. For example, if the current last station is 5+00 and the increment is 50, the next station added will be 5+50.

   A value of zero will cause the station to increment by 1'. The input cursor will move to the Station field instead of to the Elevation field when adding a new station. The value the station can be changed by data entry.

   The default value for Station Increment is located on the Tools/Options toolbar, Ground tab. A change to Station Increment on the Ground Profile/Cross Section tab will override the default value found on the Tools/Options toolbar Ground tab.

   When Station Increment is set to a value, WinPond automatically uses the last station value plus the Station Increment to create a new station.

   When Station Increment equals blank or is set to zero, the new station value will remain blank.

2. **Height of instrument:**
   When a value for **Height of instrument** is entered in the Ground Point Modifiers dialog box, e.g., 105, WinPond assumes Foresight values are being entered. The input label of **Elevation** is changed to **Foresight.** All values on the Foresight row will be converted from Elevation to Foresight.

   When Elevation = 90 and Height of Instrument = 105, Foresight = 15".

   To display the Ground Point Modifiers dialog box, double click on the either of the **point fields (Elevation or Distance)** in a specific Cross section station row.
   The value of Height of instrument may be changed at any time.

3. **Percent ground slope:**
   Each station must have one point with distance = 0 (the baseline).

   Percent ground slope should be used when there is only one point with a distance = 0. When percent ground slope is entered, the 2nd point will automatically be generated by WinPond.

   Entering a value for Percent ground slope, will allow you to enter one ground point and have a second point computed. The first point must be entered in order to see the results of the second (computed) point. The second point will be the override offset from the first point.

A value for **Percent ground slope** can be entered in the Ground Point Modifiers dialog box, e.g., 20. Percent ground slope can be entered either before or after the first point has been entered in the data entry box. To display the Ground Point Modifiers dialog box, double click on either of the **point fields (Elevation or Distance)** in a specific Cross section station row.

Percent ground slope entered in the Ground Point Modifiers dialog box and the value for Offset for slope will be used to automatically generate the next point. The default **value for Offset for slope (in ft.)** can be found at Tools/Options/Ground.

A positive slope is assumed to be one which rises from left to right while looking in the direction of DECREASING station. A negative slope would fall from left to right.

4. **Practice ID:**
   Practice ID indicates the current practice you are working on. The only Practice ID in WinPond is DAM.

5. **Point Number __ of __**
   The first number represents the point you are working on. The second number represents the number of points entered for this cross section row. Only 5 points are displayed on the screen at one time. As you enter more than 5 values, they are scrolled horizontally. These additional values can be viewed using the scroll bar at the bottom of the screen.

   At least one ground point is required. When there is only one ground point, the earthwork calculations will assume flat ground at the cross section.

6. **CrossSection __ of __:**
   The first number represents the cross section number you are working on. The second number represents the total number of cross sections entered.

   A specific cross section includes a Station and related points.
   a. A cross section point is identified by Elevation and Distance.
   b. The maximum number of points that can be attached to a station is 25.
   c. Five points attached to each station can be viewed at one tine. When the number of points attached to a station exceeds 5, a scroll bar will appear at the bottom of the screen to allow display of the additional points attached to that Station.

7. **Station:**
   A station is a point along the baseline from which distances and location are measured. Each station must have a point with distance = 0 (which is the point where you are standing).

   On the Ground Profile/Cross Section Tab, Five stations can be viewed at one time. When the number of stations reaches 5, a scroll bar will appear on the right side of the screen to allow display of the additional stations.

   A new station should be entered in the empty row at the end of the list of stations.

The stations are placed in ascending order as they are entered.

If the station already exists warning message #35 will be displayed:
The station just entered is a duplicate. Duplicate stations are not allowed.
The duplicate will be deleted.

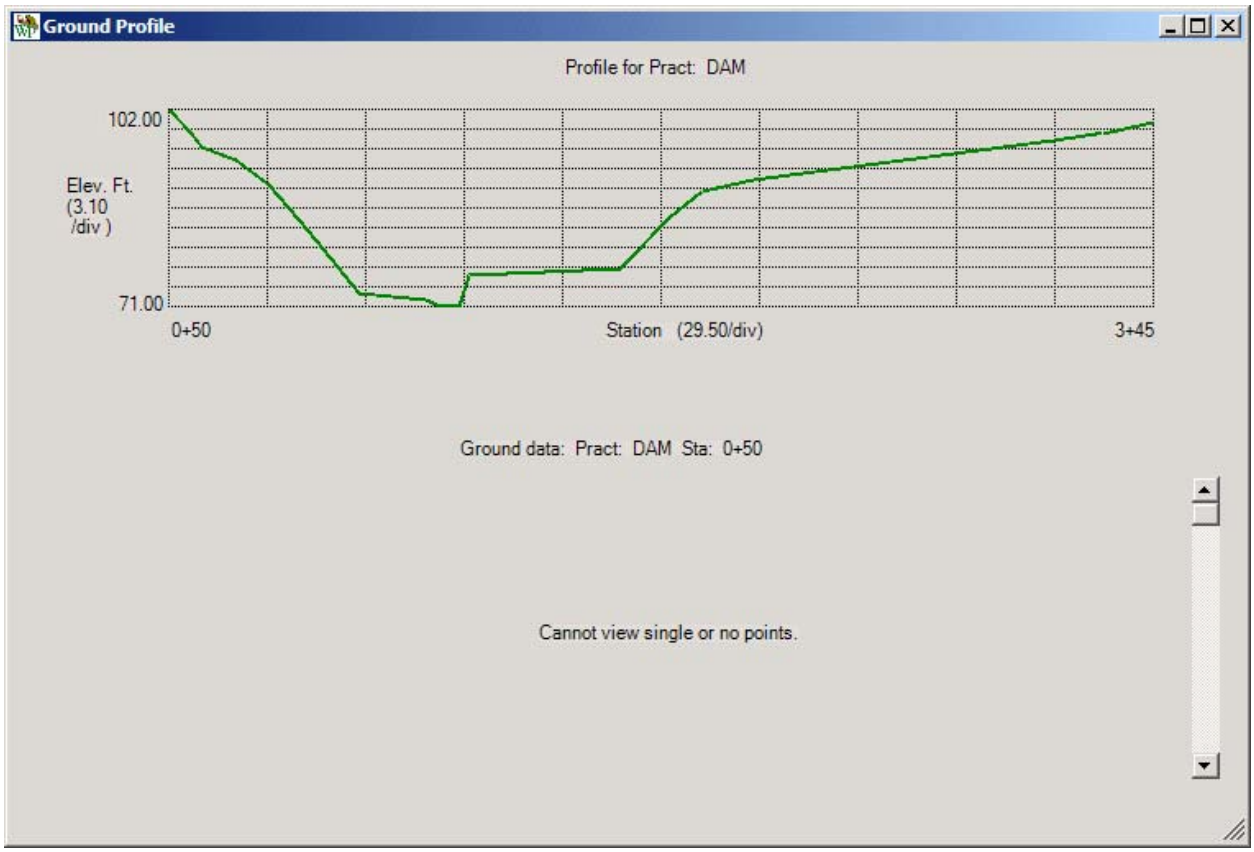
8. Elevation or Foresight:
Data input box for elevation or foresight for a point related to a station for a cross section. Points are sorted by distance.

9. Distance:
A Distance input box is used to record a point related to a station in a cross section.

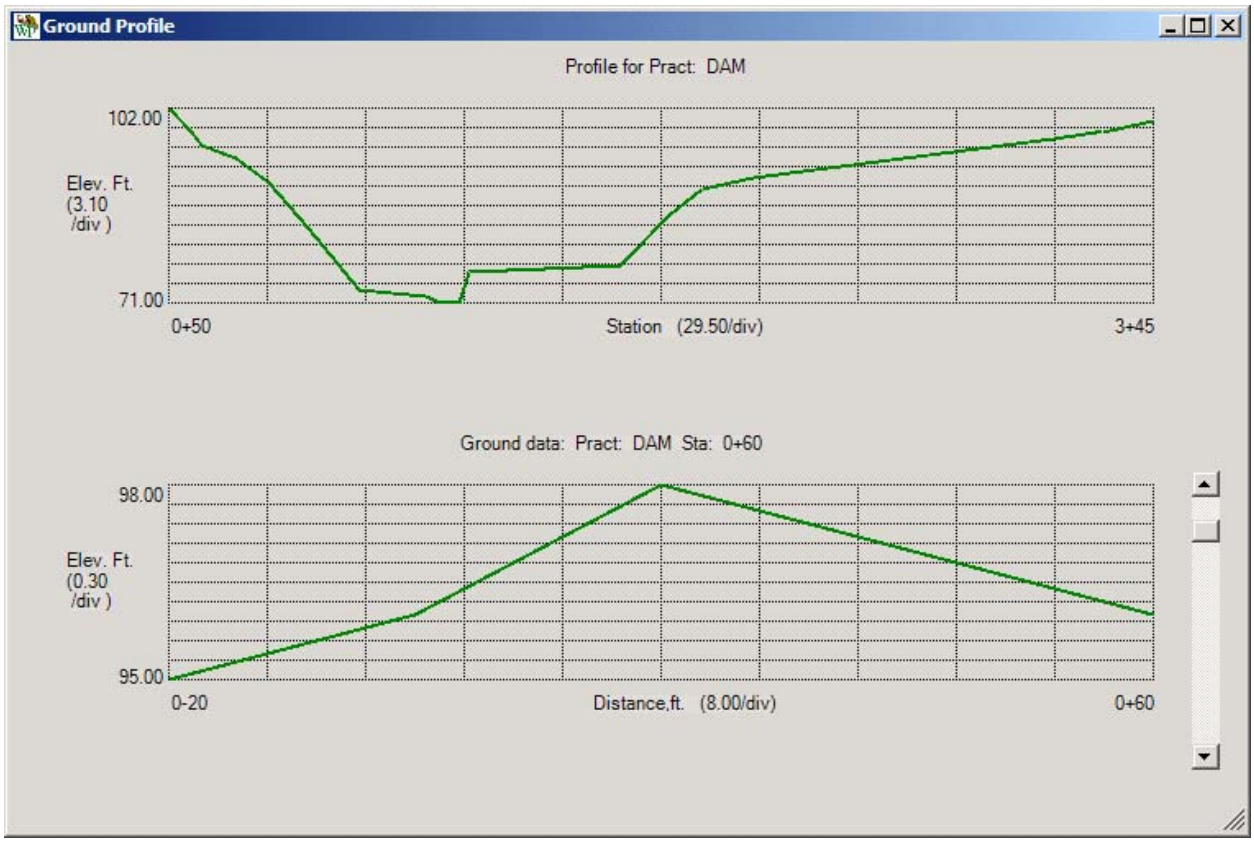
Distance is measured from the baseline (see the cross-section definition in Figure 2 above). Points to the left (when looking in direction of decreasing station are negative. Points to the right are positive.

The points need not be entered in any order, they will be sorted automatically. Two points can not be entered with the same distance. Sequential points are located at locations that are multiples of the offset. Points are sorted by Distance.

10. View button:
The view button displays a graph for the Profile for Practice: DAM, and a graph for Ground data: Practice DAM: Station n+nn



View of Baseline Profile (Ground Profile at distance 0.00 at every Station.)



View of Baseline Profile and Ground Cross Section (at Station 0+60) **:**

******* Status Bar Message Line at bottom of window *******

Data Element Source of value

1. Inlet Elevation - Data entered on Principal Spillway Tab - T5

2. Conduit Diameter - Data entered on Conduit Tab, Trials - T6,
- Data value selected on Principal Routing Tab,
Trial for Routing auxiliary - T7

3. Auxiliary Elevation - Data calculated or entered on Principal Routing Tab - T7

4. Top of Dam = Minimum top of fill elevation
- Value calculated on Principal Routing Tab - T7
- Value calculated =
Auxiliary Elevation + Auxiliary Spillway to top of dam

- Auxiliary Spillway to top of dam value from
Options - Auxiliary Spillway.

L Embankment Cross Section -- T12 05/03/2005

After entering the ground data, the embankment cross section template(s) are defined on the screen shown below. Figure 9 below shows a cross section template with the appropriate dimensions defined. This cross section is viewed in the direction of decreasing station.

Note: Make sure to enter stations located upstream of the centerline as negative stations.

After entering the ground data stations on the Ground Profile/Cross Section tab, T11, embankment cross section template(s) can be created on the Embankment Cross section tab, T12.

Stations displayed on the Ground Profile/Cross Section tab make up the Ground Profile range. The Ground Profile range can be divided into sections by the Embankment cross section templates. Each template represents a range beginning with the station specified on the template, and ending with of the station on the next template.

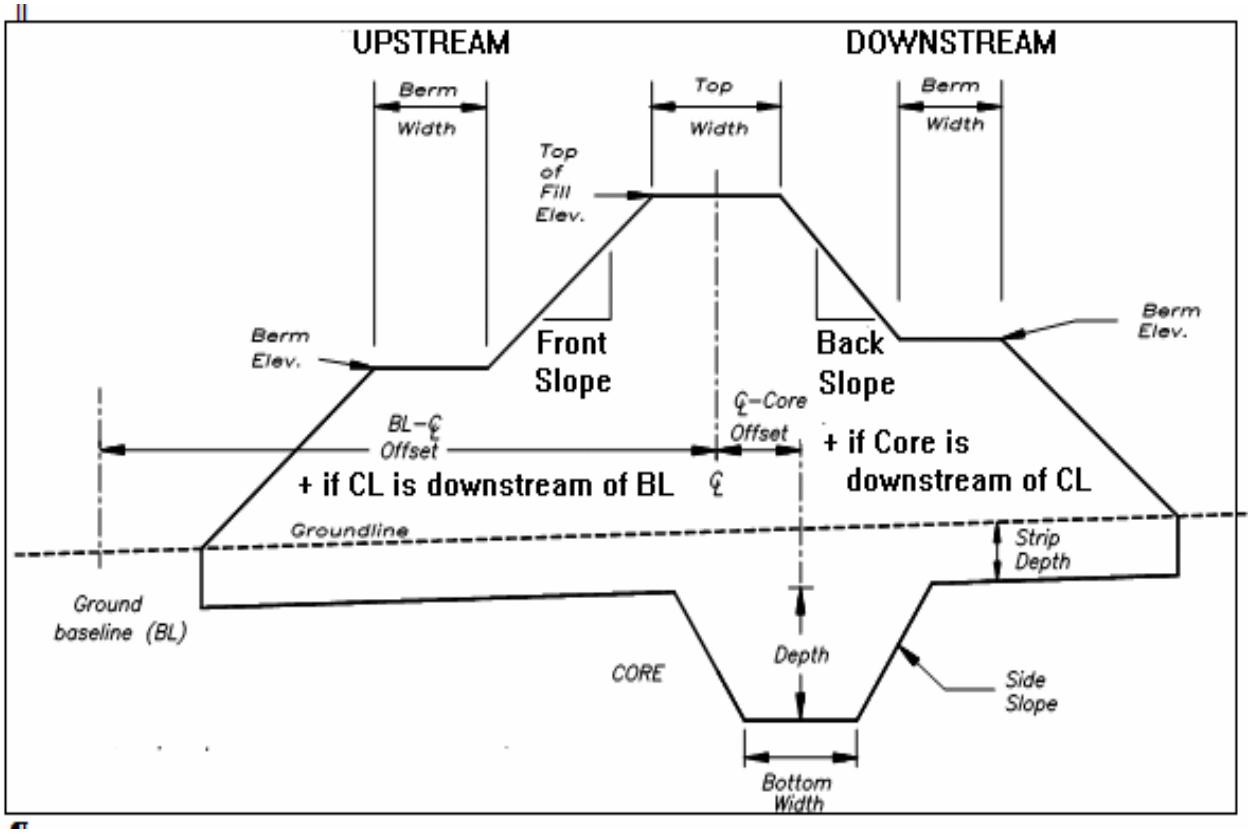
When more than one template has been created. the templates must be in ascending order within the Ground Profile range. The station on each template defines the beginning of a template range. The station on the next template is the beginning of the next template range. When multiple templates are present the station on each template defines the beginning of an adjacent template section on the Ground Profile range.

The maximum number of templates allowed is 20.

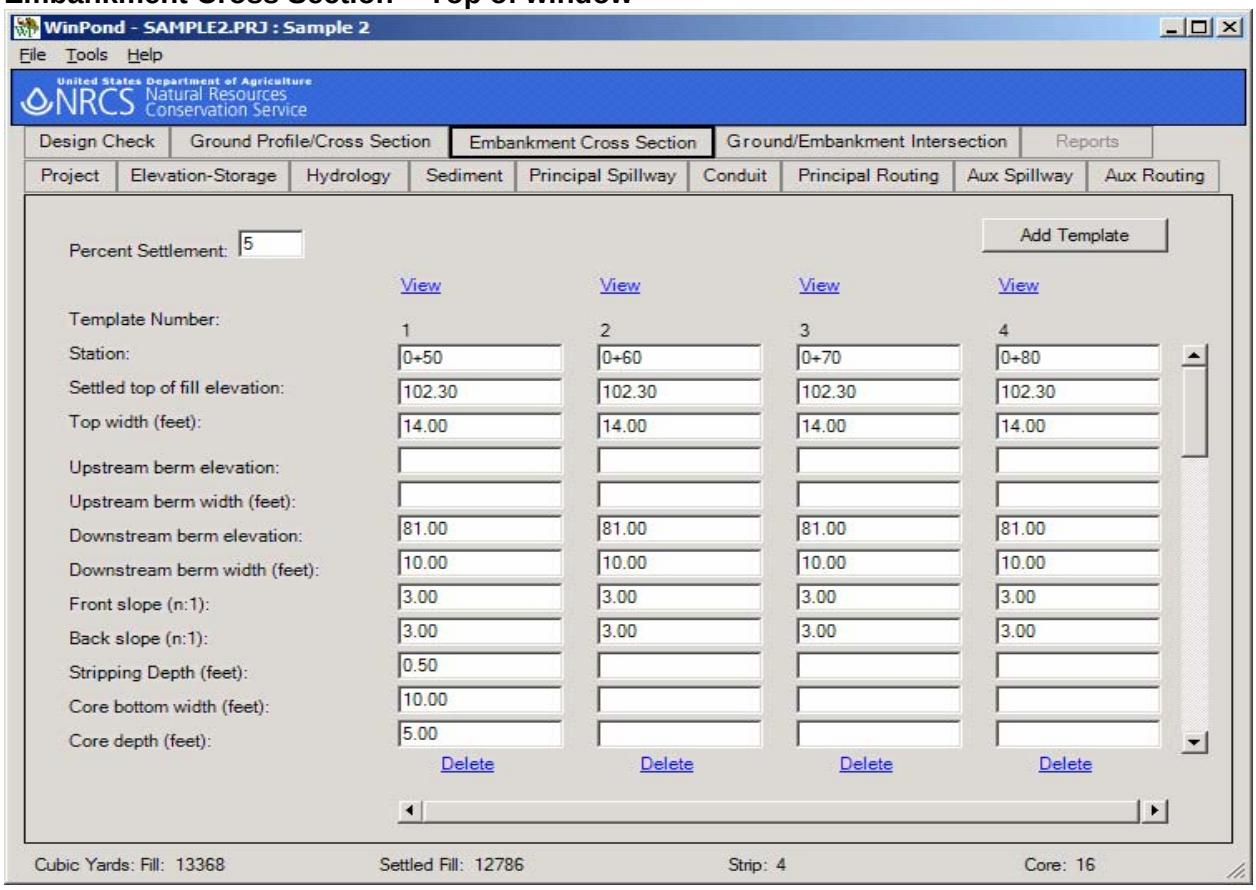
When a template station falls outside of the Ground Profile range, the view link will not execute and no view will be displayed.

When this screen is first displayed, the earthwork quantities (explained below) are calculated and displayed on the message line located at the bottom of the screen. **If any changes are made to earthwork quantities, these values will be recalculated automatically,** e.g., Settled Top of Fill Elevation.

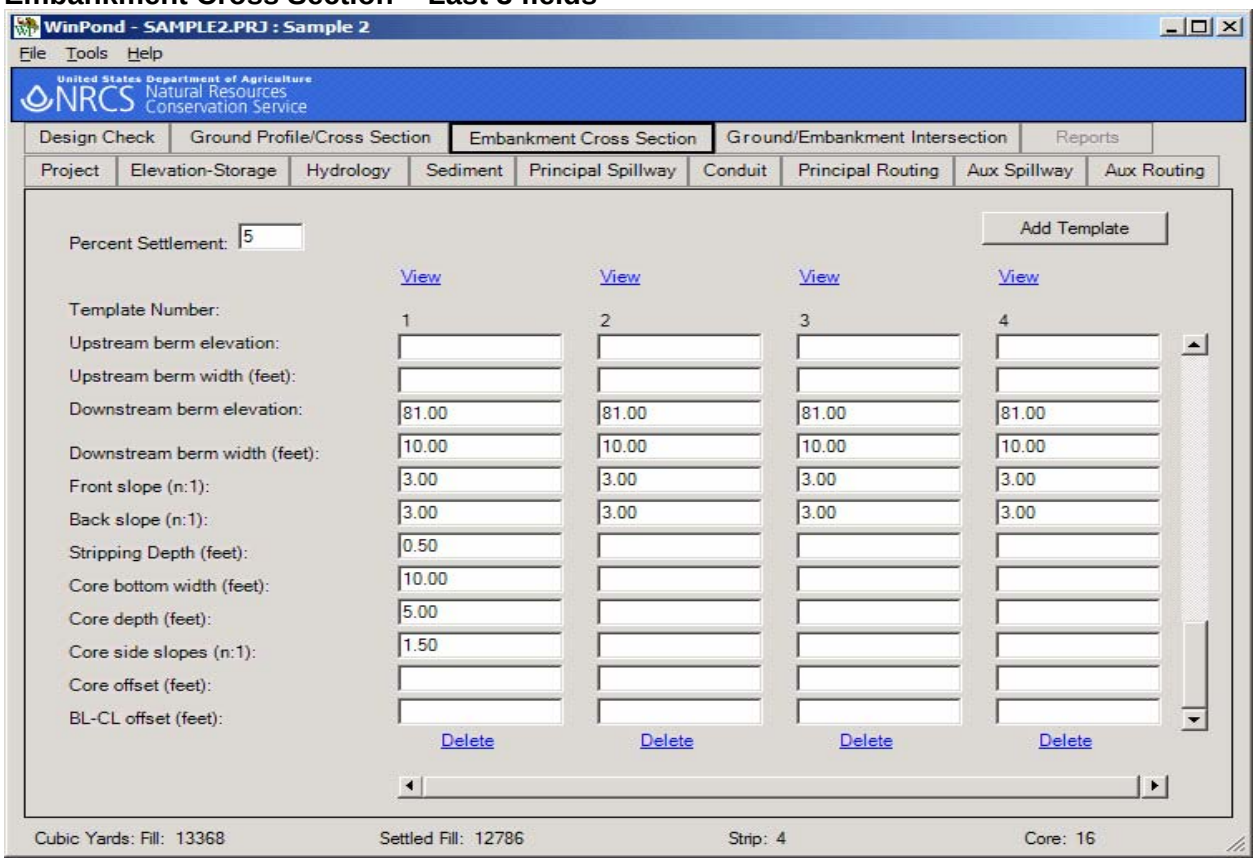
Figure 9. Cross section template for earthwork



Embankment Cross Section - Top of window



Embankment Cross Section - Last 3 fields



******* Data Entry for Embankment Cross Section on Tab 12 *******

1. Calculated Volumes: Earthwork quantities in cubic yards.

The earthwork quantities (in cubic yards) are computed and displayed on the message line at the bottom of the screen:

I. **Fill (Constructed fill)**
II. Settled Fill
III. Strip
IV. Core

If any changes are made to earthwork quantities, these values will be recalculated automatically whenever a change is made.

Fill (Constructed).

The volume of fill required for the dam structure including the amount needed to compensate for any settling that may take place. The level of this fill volume after settling is the Settled fill

elevation.

Settled fill. The volume of fill required to completely fill up the dam structure after settling has taken place.

Strip. The volume of soil removed from beneath the dam structure and replaced with a non-permeable material. This material covers the entire **width** of the dam.

Core. The volume of the soil replaced on the lower surface at the center of the dam structure to provide support for the dam structure. This replaced soil extends for the entire **length** of the dam.

2. Percent Settlement or Overfill (feet).

Percent Settlement displayed on the Embankment Cross Section tab originates from the value of Percent Settlement on the Primary Spillway tab. To change the value of Percent Settlement return to the Primary Spillway tab.

Enter the percent of settlement that you expect to occur or the amount of overfill in feet you plan to use. [Pressing <*F4*> will switch between the two methods.] The percent of settlement is computed as as follows:

$$\%S = 100 * (E_c - E_s) / (E_s - E_{low})$$

where: %S = percent settlement,
E_c = constructed elevation,
E_s = settled elevation, and
E_{low} = ground elevation at centerline.

3. Add Template button.
The **Add Template button** is used to add templates on the Embankment Cross Section tab. (Maximum templates = 20).

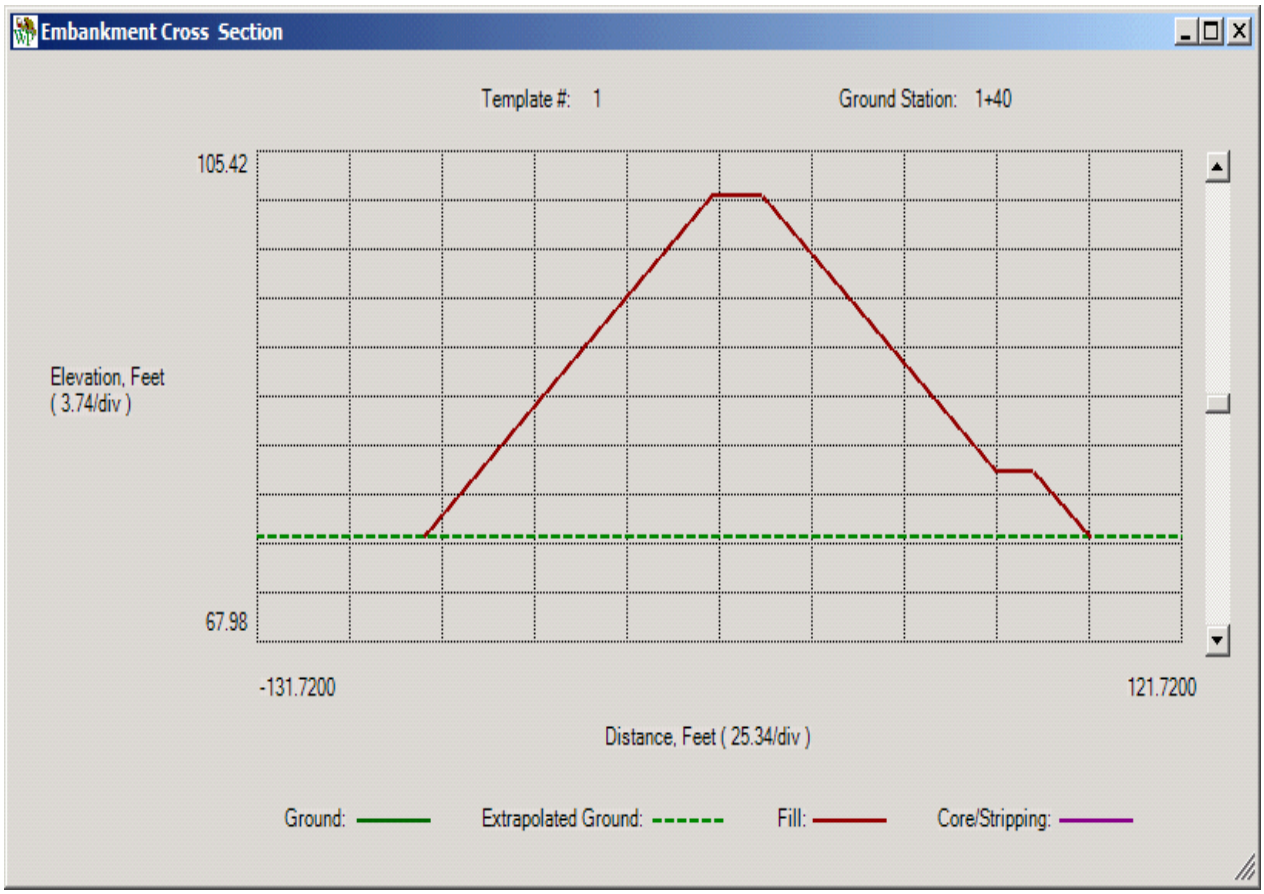
A template on the Embankment Cross Section tab is a cross section of a possible dam for this site.

Delete link
This link will remove the associated template. At least one template is required.

4. View link.
Single click on the **View** link to display a View of the Embankment Cross Section for the template number data located immediately below the View link.

Use the scrollbar on the right side of the Embankment Cross Section view to display the change in Elevation in feet for the cross section.

Legend: **Ground - solid green line**
Extrapolated Ground - dashed green line
Fill (Constructed/Settled) - solid red line
Stripping/Core - solid purple line



5. Template Number.
Three templates are shown on the screen with the appropriate template numbers displayed.

6. Station. (Entered data)
Enter the station at which this template will begin. The template range will extend up to the next station entered or to the end of the data (if this is the last template). Enter the stations in ascending order.

NOTE: To enter data on the Embankment Cross Section tab in any of the data elements from **7. Settled top of fill elevation** through **14. Back Slope**, clear the current value from the field using, delete, backspace or space. The current value for a field will then be replaced by a previously entered value from the design.

7. **Settled top of fill elevation.** (Entered data)
   Enter the elevation of the settled top of fill.

8. **Top width (feet).** (Entered data)
   The top width of the dam is entered here in feet.

9. **Upstream berm elevation.**
   Enter the upstream berm elevation in feet. WinPond assumes the berm is level, i.e., no slope. If no berm is used, leave elevation and width blank. However, if berm elevation is below natural ground, enter 0 for elevation and 0 for width.

10. **Upstream berm width (feet).**
    Enter the upstream berm width in feet. WinPond assumes the berm is level, i.e., no slope. If no berm is used, leave elevation and width blank. However, if berm elevation is below natural ground, enter 0 for elevation and 0 for width.

11. **Downstream berm elevation.**
    Enter the downstream berm elevation in feet. WinPond assumes the berm is level, i.e., no slope). If no berm is used, leave elevation and width blank. However, if berm elevation is below natural ground, enter 0 for elevation and 0 for width.

12. **Downstream berm width (feet)**.
    Enter the downstream berm width in feet. WinPond assumes the berm is level, i.e., no slope. If no berm is used, leave elevation and width blank. However, if berm elevation is below natural ground, enter 0 for elevation and 0 for width.

13. **Front Slope (n:1)**. (Entered data)
    This is the slope of the dam on the upstream side. This value should be entered as a ratio of horizontal distance to 1 foot of vertical distance, e.g., for 3:1, enter 3. WinPond uses this value for the slope above and below the berm (if any).

14. **Back Slope (n:1)**. (Entered data)
    This is the slope of the dam on the downstream side. This value should be entered as a ratio of horizontal distance to 1 foot of vertical distance, e.g., for 3:1, enter 3. WinPond uses this value for the slope above and below the berm (if any).

15. **Stripping Depth (feet)**.
    Enter the depth of any stripping in feet. Stripping volume is computed assuming this depth occurs from upstream toe to downstream toe. If no stripping is done, leave blank.

16. **Core bottom width (feet).**
    Enter the bottom width of the core in feet. If no core, leave blank.

17. **Core Depth (feet)**.
    Enter the core depth in feet. If no core, leave blank.

18. **Core side slopes (n:1**).

Enter the side slope ratio for the sides of the core. This is entered as a ratio of horizontal distance to 1 foot of vertical distance (e.g., 2.5:1, enter 2.5). If no core, leave blank.

19. Core offset (feet).

The core offset is the distance from the dam centerline to the core centerline. While looking in the direction of decreasing station, the offset value is positive if the core centerline is to the right of the dam centerline. If the core centerline is to the left of the dam centerline the offset value is negative.

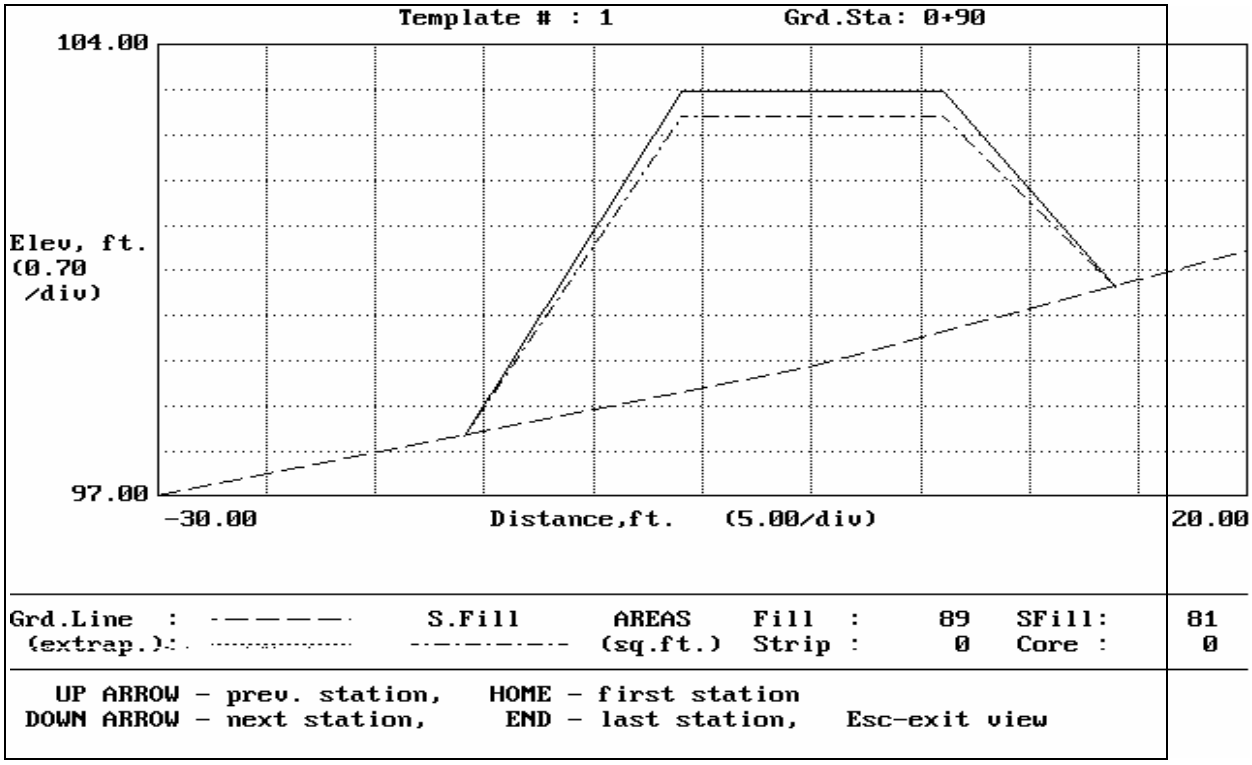
20. BL-CL offset (feet). (Entered data)

The ground data baseline (BL) could be considered as the centerline or flagline for the ground data. Baseline is the line joining all the 0 (zero) distances for each ground data cross section. CL is the dam centerline. BL-CL offset is the distance from the ground baseline to the dam centerline. While looking in the direction of decreasing station, the offset value is positive if the dam centerline is to the right of the ground baseline, else it is negative. Changing this value shifts the dam upstream or downstream.

21. Cubic Yards. (On message line)

The earthwork quantities (in cubic yards are computed and displayed here for the fill (Fill, Settled Fill, Strip, and Core) volumes.

View of Embankment Cross Section



******* Status Bar Message Line at bottom of window *******

Values on this Status Bar Message Line are calculated from numbers on Embankment Cross Section Tab - T12. All of these values are volume in cubic yards.

When values on Tab T12 change, the Status Bar Message Line values will be recalculated immediately.

	Data Element	Source of value
1.	Fill	Embankment Cross Section Tab - T12.
2.	Settled Fill	Embankment Cross Section Tab - T12.
3.	Strip	Embankment Cross Section Tab - T12.
4.	Core	Embankment Cross Section Tab - T12.

M Ground/Embankment Intersection -- T13 02/07/2005

The embankment centerline stations, where the ground elevation is equal to the Settled fill elevation are shown along with the Auxiliary spillway elevation on the Ground/Embankment Intersection tab. These 4 stations include Settled fill station on left and right ends of the DAM, and Auxiliary Spillway stations on left and right ends of the DAM.

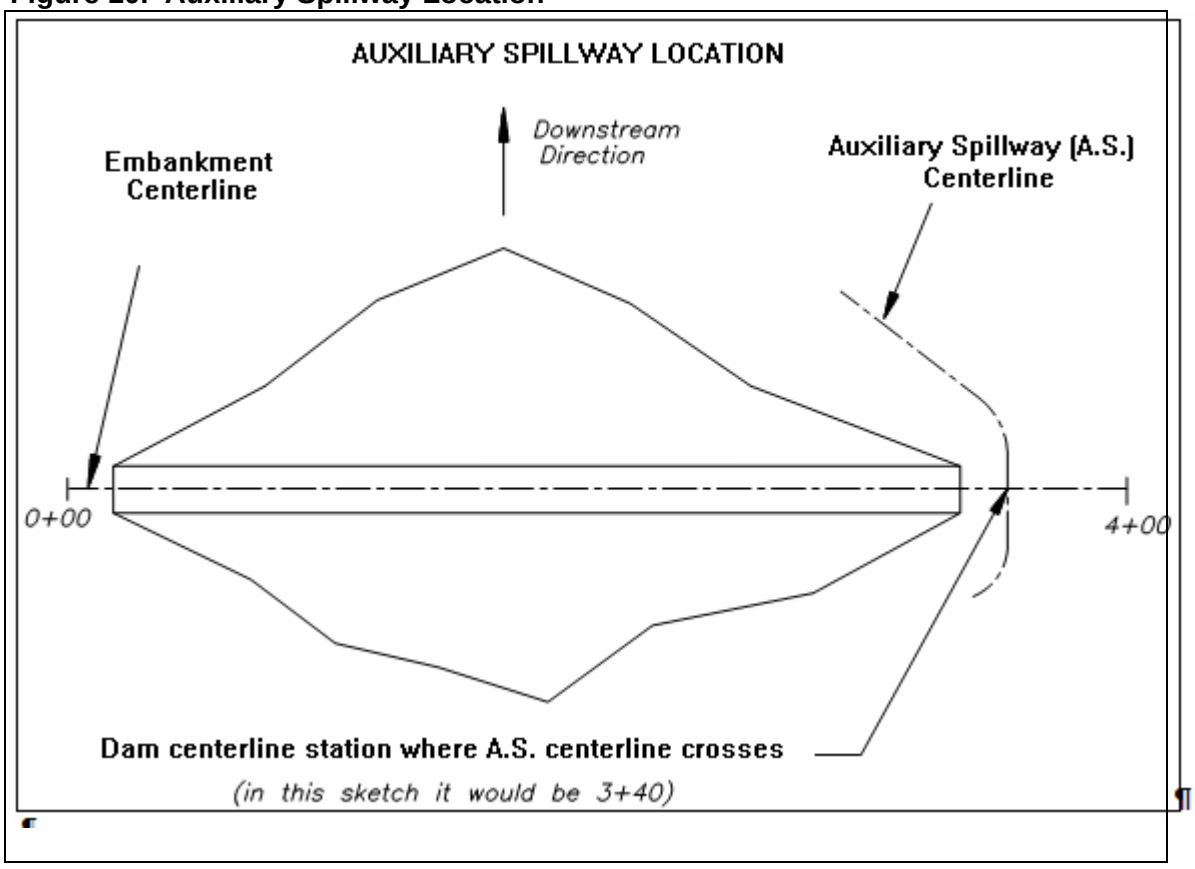
When a station is beyond entered ground data, the location is extrapolated (using the previous 2 stations) from the ground data and a warning is issued. The design auxiliary spillway bottom width (feet) is also displayed.

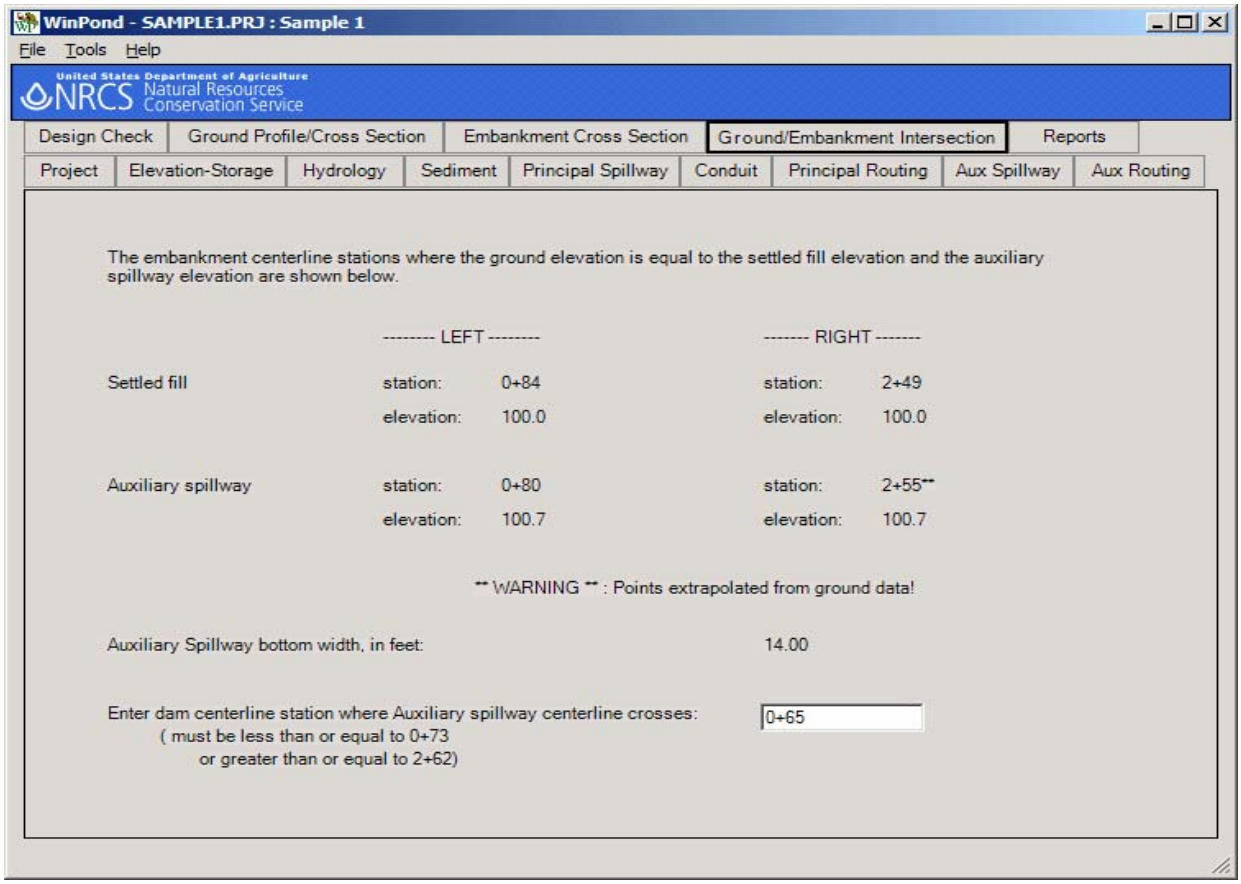
In the data entry box, enter the Dam Centerline station where the Auxiliary Spillway centerline crosses (see Figure 10. Auxiliary Spillway Location below). The location of the Dam Centerline station determines the side on which side the Auxiliary spillway is located.

A station cannot be entered which would result in the bottom of the Auxiliary spillway being in a fill condition. The location of the bottom of the Auxiliary spillway must be outside the range of the dam structure.

This station is used in printing the embankment centerline profile on the construction checkout sheet.

Figure 10. Auxiliary Spillway Location





******* Data Entry for Ground /Embankment Intersection data on tab 13 *******

The embankment centerline stations where the ground elevation is equal to the settled fill elevation and the emergency spillway elevations are shown below.

1. **Settled Fill**
   a. Left side: Station:
      Elevation:
   b. Right side: Station:
      Elevation:

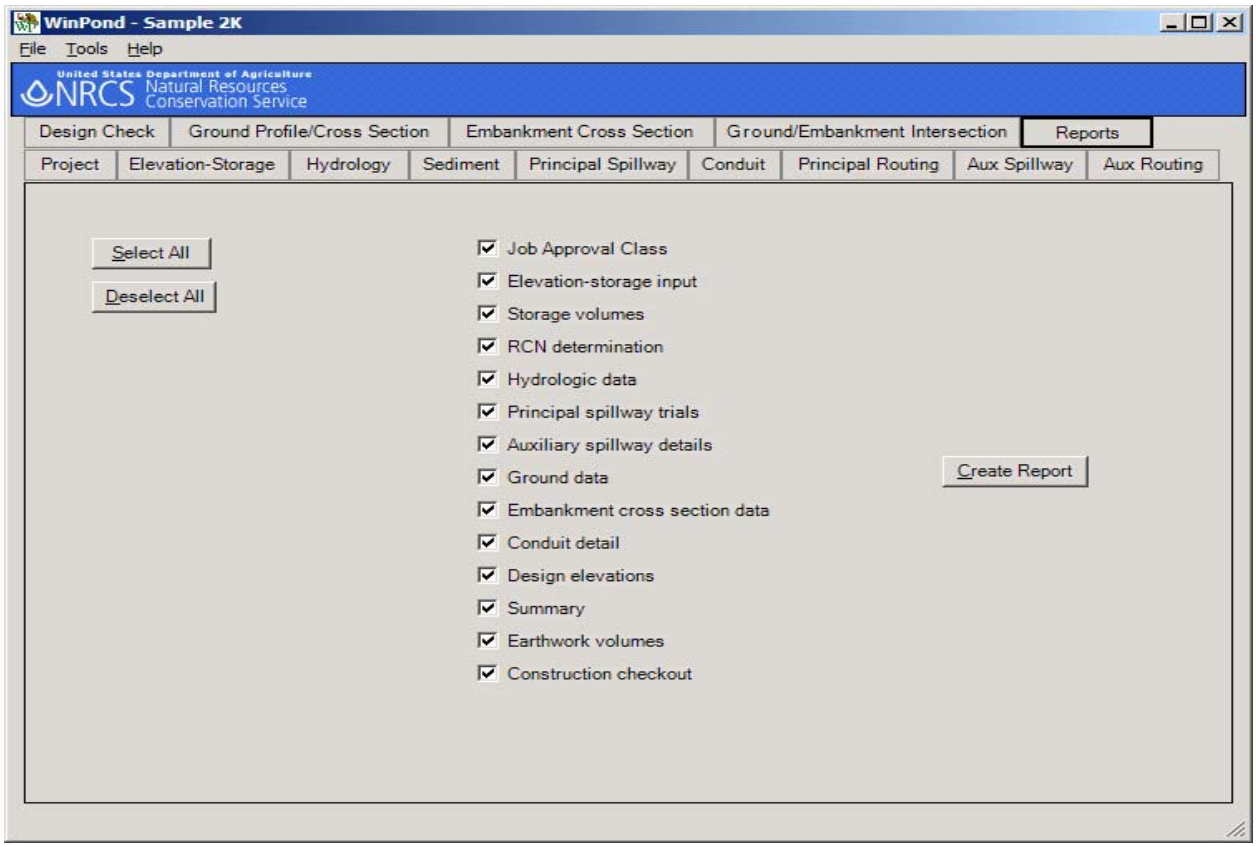
2. **Auxiliary Spillway**
   a. Left side: Station:
      Elevation:
   b. Right side: Station:
      Elevation:

3. **Auxiliary Spillway Bottom Width (feet):**

4. **Enter the dam centerline station where the Auxiliary spillway centerline crosses: nnn**
   (must be less than or equal to: n+nn

must be greater than or equal to: n+nn)

N Reports -- T14 **03/29/2005**



1. **Select Reports** To select one or more of the following reports, click on the small box to the left of the wanted report.

   To **select all reports** click on the **Select All** button.

   To **delete all reports**, click on the **Deselect All** button.

2. **Create Reports** When wanted reports have been selected, click on the **Create Report** button to create reports.

3. **Report Project Heading** When wanted reports have been selected, for each set of created reports a header report record is created. Data

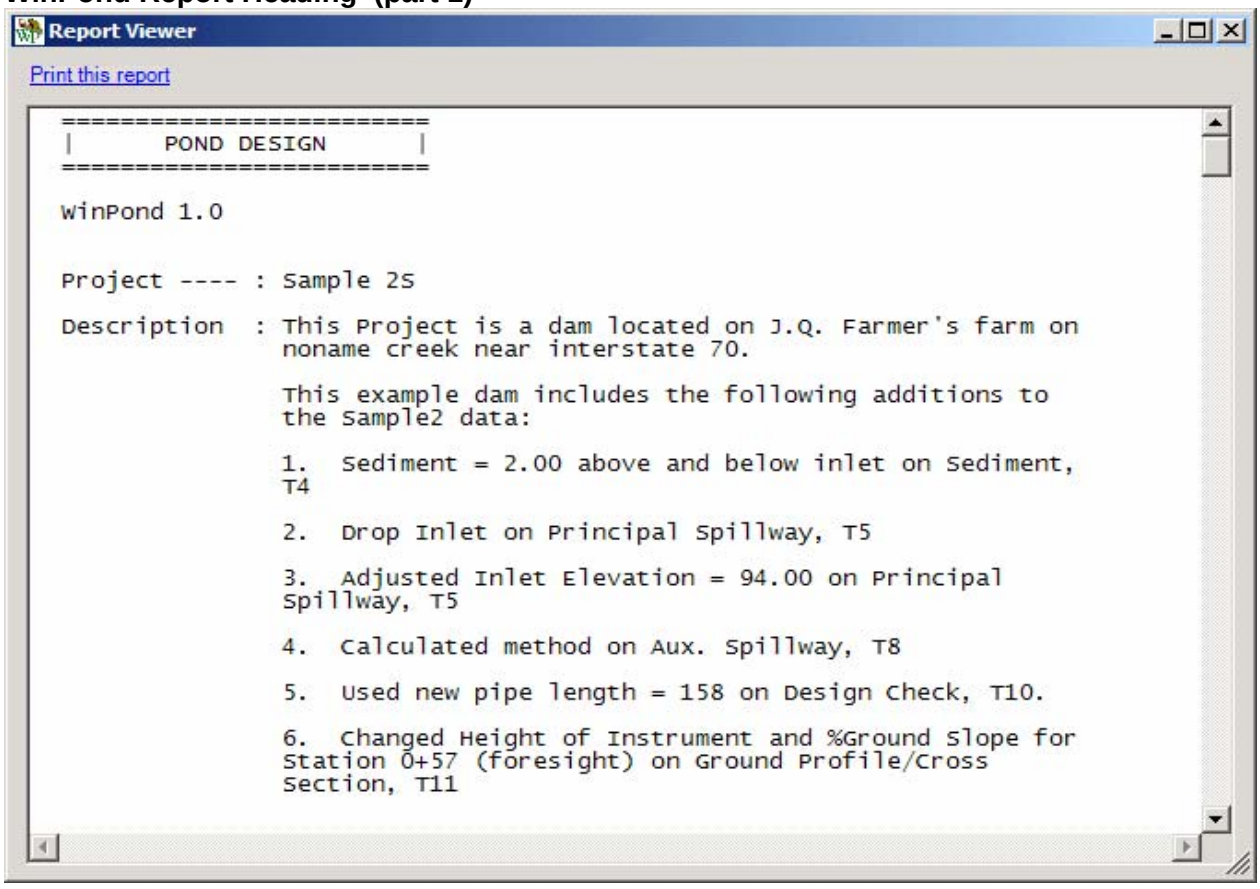
   on the report header was originally input on the **Project tab.**

   These project data include:
   1. Project name
   2. State
   3. County

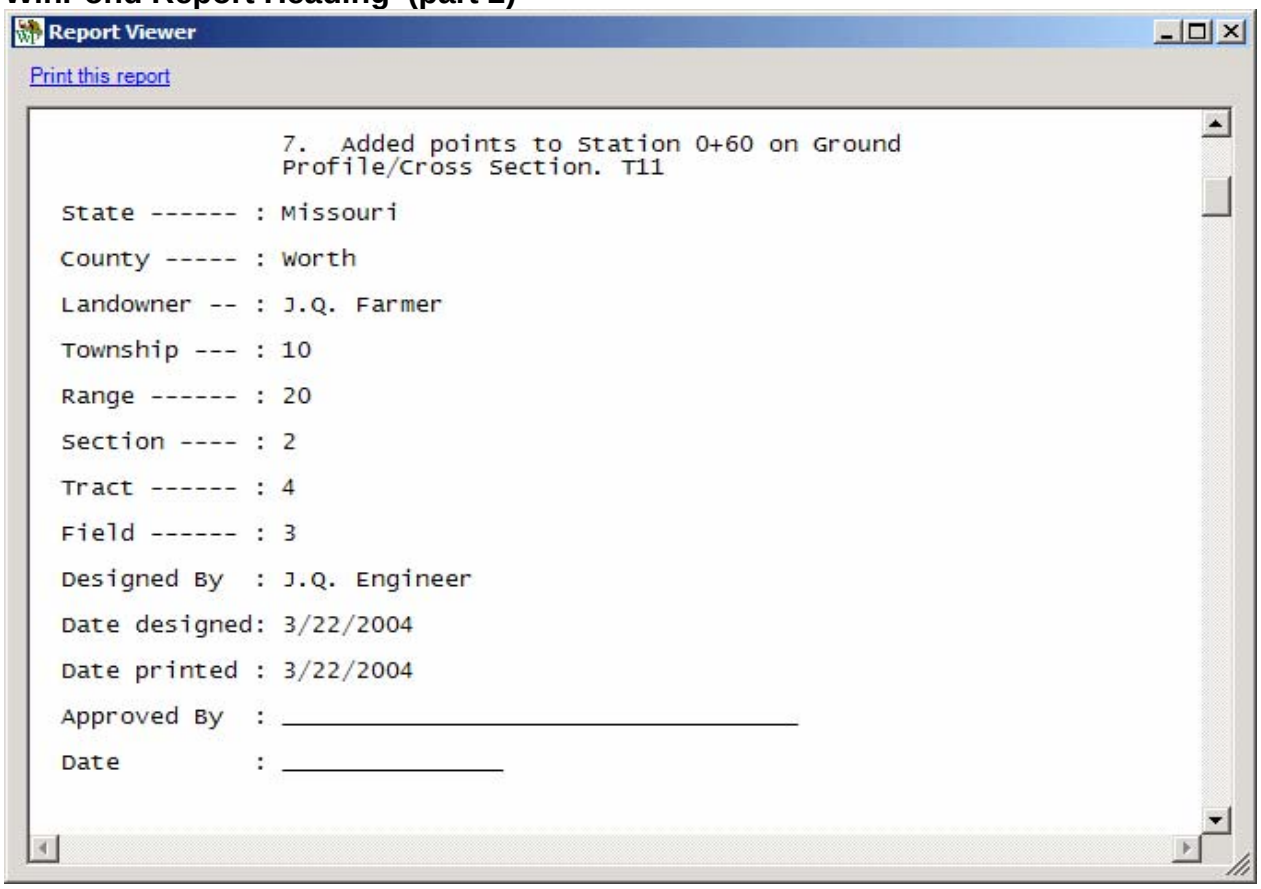
4. Landowner
5. Township
6. Range
7. Section
8. Tract
9. Field
10. Designed By
11. Date designed
12. Comments/Notes
13. Office Name & Address for the Project Report

4. **Print Reports** To print created reports, click on the **Print this report** link located immediately below the Report Viewer heading.

WinPond Report Heading (part 1)



WinPond Report Heading (part 2)

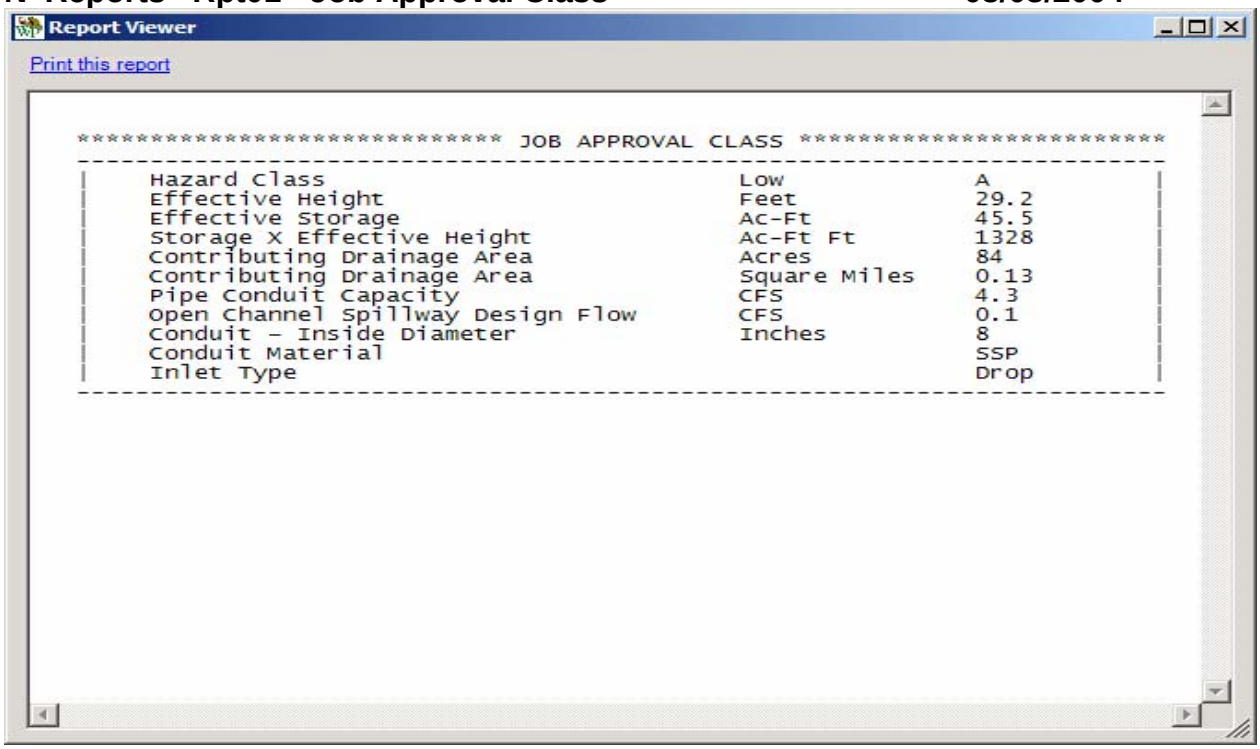


5. **Current Reports include:**
   - **a. Job Approval Class - R1**
   - **b. Elevation-storage input - R2**
   - **c. Storage volumes - R3**
   - **d. RCN determination - R4**
   - **e. Hydrologic data - R5**
   - **f. Principal spillway trials - R6**
   - **g. Auxiliary spillway details - R7**
   - **h. Ground data - R8**
   - **i. Embankment cross section data - R9**
   - **j. Conduit detail - R10**
   - **k. Design elevations - R11**
   - **l. Summary - R12**
   - **m. Earthwork volumes - R13**
   - **n. Construction checkout - R14**

6. **The WinPond report heading information for each report run is the result of data entered on**
   Tab - Any WinPond tab
   Menu: Tools/Options/General/Footer for Cover Page

7. **Data on Reports** include input entered on WinPond tabs and calculated data. Data elements and the source are listed for each report.

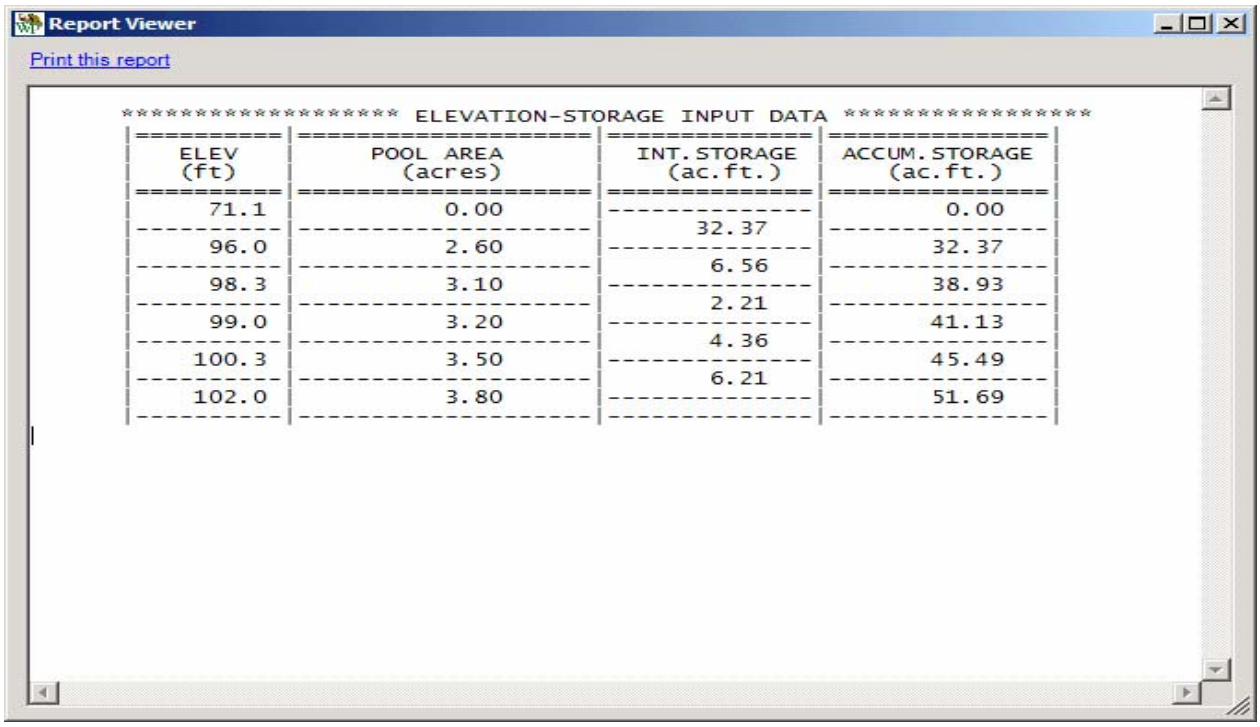
N Reports Rpt01 - Job Approval Class **03/03/2004**



Data Elements for the **Job Approval Class** report include:

	Data element	**Source**
1.	Hazard Class	constant = low
2.	Effective Height (ft.)	Principal Routing, T7 - Effective height
3.	Effective Storage (ac.ft.)	Principal Routing, T7 -Total at auxiliary
4.	Storage x Effective Height (ac.ft., ft.)	Principal Routing, T7 - Height x storage
5.	Contributing Drainage Area (acres)	Hydrology, T3 - Drainage area (acres)
6.	Contributing Drainage Area (sq. miles)	Hydrology, T3 - Drainage area (calculation)
7.	Pipe Conduit Capacity (cfs)	calculation (not on a tab)
8.	Open Channel Spillway Design Flow (cfs)	Auxiliary Routing, T9 - Flow in auxiliary
9.	Conduit - Inside Diameter (in.)	Conduit, T6 - Diameter
10.	Conduit material	Conduit, T6 - Type
11.	Inlet Type	Principal Spillway, T5 - Inlet type

N Reports Rpt02 - Elevation-Storage Input Data 02/11/2004

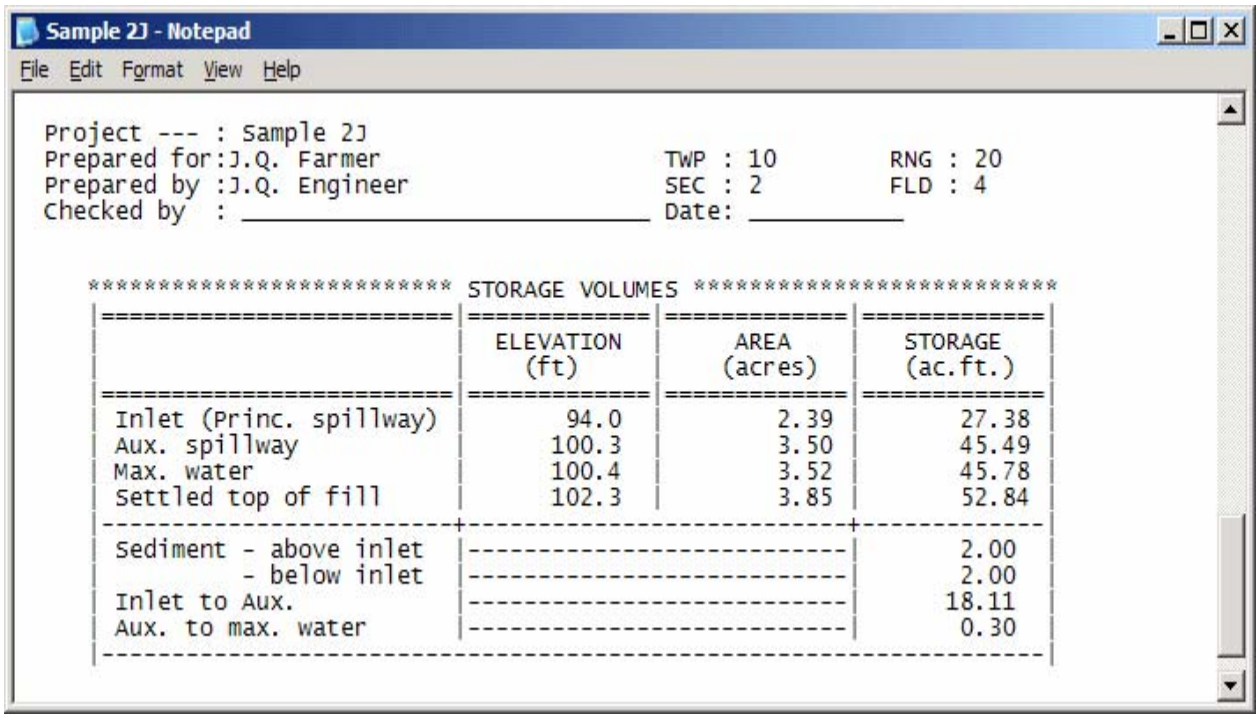


ELEV (ft)	POOL AREA (acres)	INT. STORAGE (ac.ft.)	ACCUM. STORAGE (ac.ft.)
71.1	0.00		0.00
		32.37	
96.0	2.60		32.37
		6.56	
98.3	3.10		38.93
		2.21	
99.0	3.20		41.13
		4.36	
100.3	3.50		45.49
		6.21	
102.0	3.80		51.69

Data Elements for the **Elevation-storage input** report include:

Data element	**Source**
1. Elevation (ft.)	Elevation-Storage, T2
2. Pool Area (sq.in.)	Elevation-Storage, T2
3. Pool Area (acres)	Elevation-Storage, T2
4. Int. Storage (ac.ft.)	Elevation-Storage, T2
5. Accum. Storage (ac.ft.)	Elevation-Storage, T2

N Reports Rpt03 - Storage Volumes 02/26/2004



Storage volumes - R3

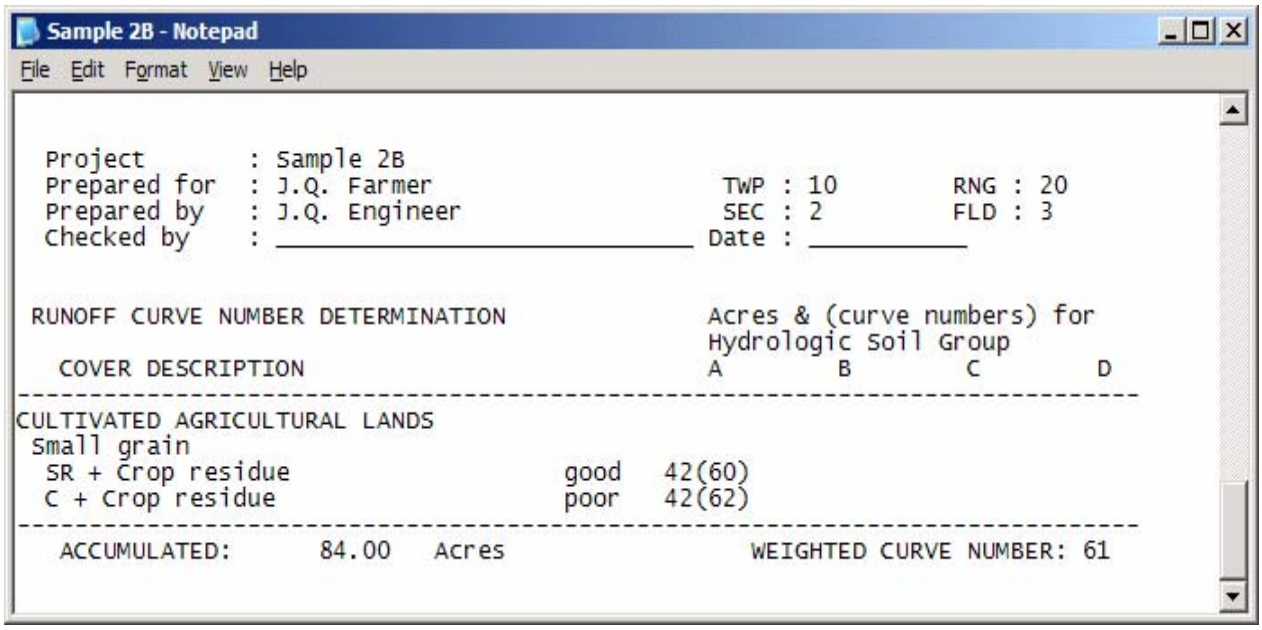
Data Elements for the Storage volumes report include:

Data element	**Source**
1. Inlet (Princ. spillway)	Principal Spillway, T5
Elevation (ft.)	Principal Spillway, T5
Area (acres)	interpolated from Elevation-Storage, T2
Storage (ac.ft.)	calculated
2. Aux. Spillway	Auxiliary Spillway, T8
Elevation (ft.)	Principal Routing, T7
Area (acres)	interpolated from Elevation-Storage, T2
Storage (ac.ft.)	calculated
3. Max. water	
Elevation (ft.)	calculated
Area (acres)	interpolated from Elevation-Storage, T2
Storage (ac.ft.)	calculated
4. Settled top of fill	Auxiliary Routing, T8 - Top of fill OR [(Auxiliary Routing, T8 - Top of fill) minus (Principal Spillway, T5 -

	% Settlement)]
Elevation (ft.)	calculated
Area (acres)	interpolated from Elevation-Storage, T2
Storage (ac.ft.)	calculated
5. Sediment - above inlet	Sediment, T4
Storage (ac.ft.)	calculated
6. Sediment- below inlet	Sediment, T4
Storage (ac.ft.)	calculated
7. Inlet to Aux.	calculated
Storage (ac.ft.)	calculated
8. Aux. to max. water	calculated
Storage (ac.ft**.)**	calculated

N Reports Rpt04 - RCN determinations 01/28/2004

RPT04 - RCN determinations

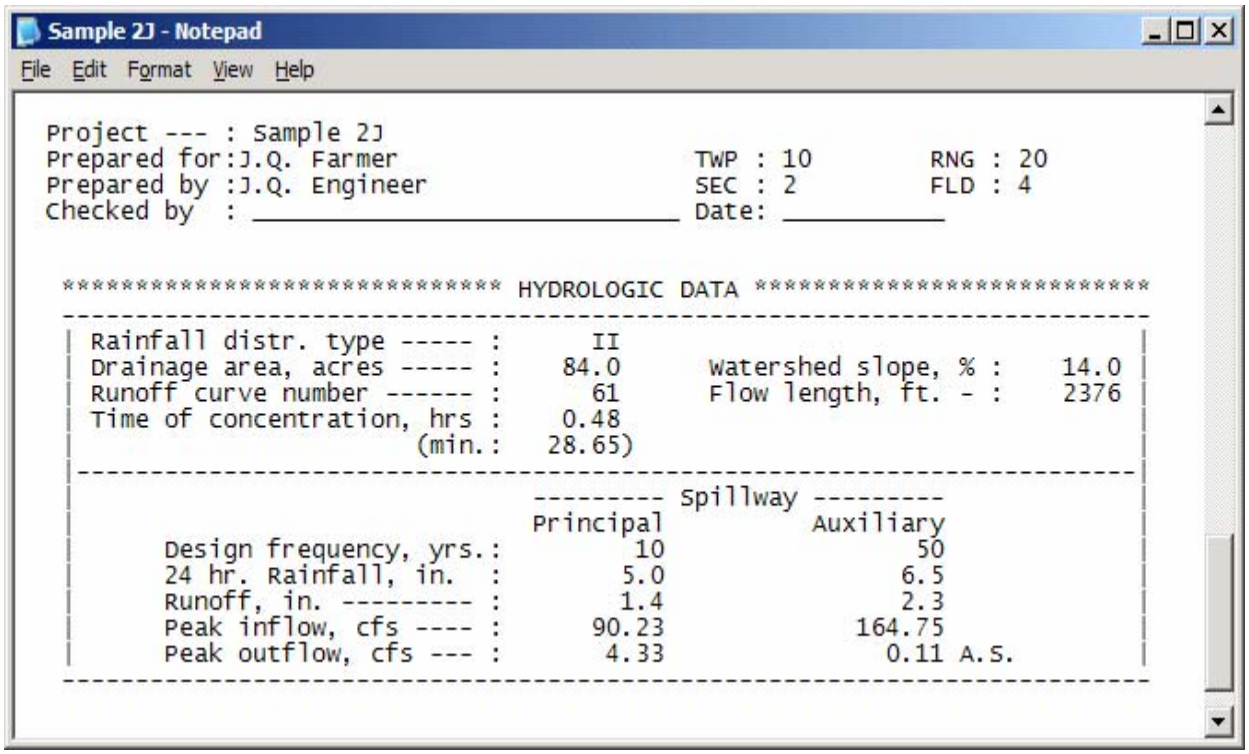


RCN Determinations

RCN Determination data on this report were entered on Hydrology, T3
Data elements for **Runoff Curve Number (RCN) Determinations** include:

Data element	**Source**
1. Cover Description	Hydrology, T3 - RCN
2. Acres & curve numbers for Hydrologic Soils Group	Hydrology, T3 - RCN
3. Accumulated - acres	Hydrology, T3 - RCN
4. Weighted Curve Number	Hydrology, T3 - RCN

N Reports Rpt05 - Hydrologic data 02/17/2004



Data elements for the **Hydrologic Data** report include:

Hydrologic Data

Data element:	Source
1. Rainfall distr. type	Hydrology, T3 - Rainfall distribution type
2. Drainage area (acres)	Hydrology, T3 - Drainage area (acres)
3. Runoff curve number	Hydrology, T3 - Runoff Curve Number (RCN)
4. Watershed slope (%)	Hydrology, T3 - Watershed slope (%)
5. Flow length (ft.)	Hydrology, T3 - Flow Length (feet)
6. Time of concentration, (hrs., min.)	Hydrology, T3 - Time of concentration

Spillway Data

Data element	Source
1. Design frequency (yrs.) a. Principal b. Auxiliary	Hydrology, T3
2. 24 hr. Rainfall (in.) a. Principal	Hydrology, T3

b. Auxiliary	
3. Runoff (in.)	Hydrology, T3
a. Principal	
b. Auxiliary	
4. Peak inflow (cfs)	Hydrology, T3
a. Principal	
b. Auxiliary	
5.. Peak outflow (cfs)	
a. Principal	calculated during Principal Routing, T7
b. Auxiliary	calculated during Auxiliary Routing, T9

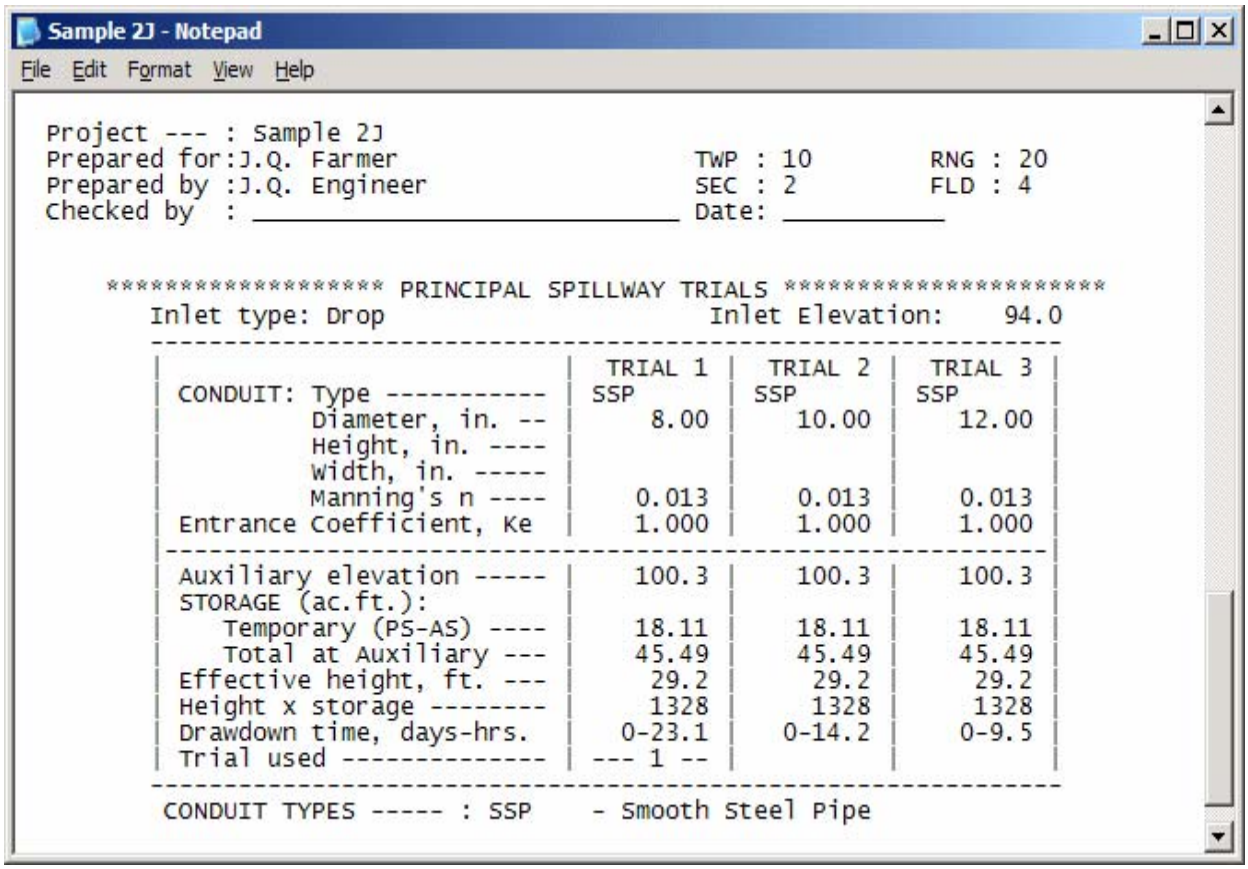
NOTE: **Report values** will be slightly different from Peak flow values found near the bottom of Hydrology, T3 where estimates from database data using EFH2 are displayed.

Actual values for peak inflow are calculated at routing time for Principal Spillway and Auxiliary Spillway. Actual Peak flow values are used on WinPond reports.

Peak inflow (cfs)
Principal - Actual value from Principal Spillway, T5
Auxiliary - Actual value from Auxiliary Spillway, T8.

Peak outflow (cfs)
Principal - Actual value from Principal Spillway, T5
Auxiliary - Actual value from Auxiliary Spillway, T8.

N Reports Rpt06 - Principal Spillway trials 02/11/2004



Sample 2J - Notepad

File Edit Format View Help

```
Project --- : Sample 2J
Prepared for:J.Q. Farmer                    TWP : 10        RNG : 20
Prepared by :J.Q. Engineer                  SEC : 2         FLD : 4
Checked by  : _____________________________ Date: __________


******************** PRINCIPAL SPILLWAY TRIALS ***********************
   Inlet type: Drop                          Inlet Elevation:    94.0
   ------------------------------------------------------------------
   |                              | TRIAL 1 | TRIAL 2 | TRIAL 3 |
   | CONDUIT: Type ------------   | SSP     | SSP     | SSP     |
   |          Diameter, in. --    |    8.00 |   10.00 |   12.00 |
   |          Height, in. ----    |         |         |         |
   |          Width, in. -----    |         |         |         |
   |          Manning's n ----    |   0.013 |   0.013 |   0.013 |
   | Entrance Coefficient, Ke     |   1.000 |   1.000 |   1.000 |
   |------------------------------------------------------------|
   | Auxiliary elevation -----    |   100.3 |   100.3 |   100.3 |
   | STORAGE (ac.ft.):            |         |         |         |
   |    Temporary (PS-AS) ----    |   18.11 |   18.11 |   18.11 |
   |    Total at Auxiliary ---    |   45.49 |   45.49 |   45.49 |
   | Effective height, ft. ---    |    29.2 |    29.2 |    29.2 |
   | Height x storage --------    |    1328 |    1328 |    1328 |
   | Drawdown time, days-hrs.     |  0-23.1 |  0-14.2 |   0-9.5 |
   | Trial used --------------    | --- 1 -- |         |         |
   ------------------------------------------------------------------
    CONDUIT TYPES ----- : SSP    - Smooth Steel Pipe
```

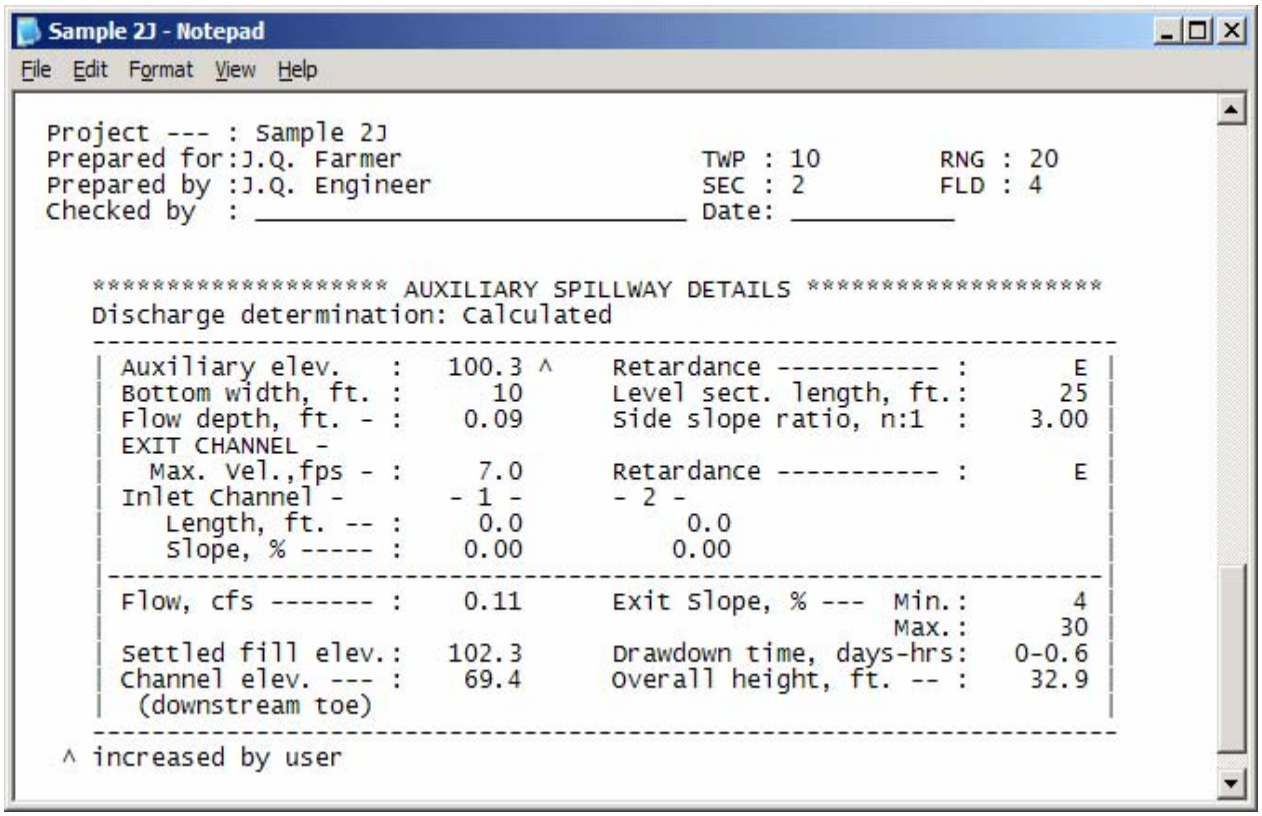
Data elements on the **Principal Spillway trials** report for trials 1-3 include:

Principal Spillway Trials

Data element	**Source**
1. Inlet type	Principal Spillway - T5
2. Inlet elevation	Principal Spillway - T5
3. Conduit	
a. Type	Conduit, T6 - Type
b. Diameter (in.)	Conduit, T6 - Diameter (in.)
c. Height (in.)	Conduit, T6 - Height (in.)
d. Width (in.)	Conduit, T6 - Width (in.)
e. Manning's n	Conduit, T6 - Manning's n
4. Entrance Coefficient, Ke	Conduit, T6 - Entrance Coefficient, Ke
5. Auxiliary elevation	Principal Routing, T7 - Auxiliary Elevation
6. Storage (ac.ft.)	
a. Temporary (PS-AS)	Principal Routing, T7 - Storage:

	Temporary
b. Total at Auxiliary	Principal Routing, T7 - Total at Auxiliary
7. Effective height (ft.)	Principal Routing, T7 - Effective height (ft.)
8. Height x storage	Principal Routing, T7 - Height x storage
9. Drawdown time (days-hrs.)	Principal Routing, T7 - Drawdown time (days- hrs.)
10. Trial Used	Principal Routing, T7 - Trial to use
11. Conduit types	Principal Routing, T7 - Conduit Type

N Reports Rpt07 - Auxiliary Spillway Details 02/26/2004



Sample 2J - Notepad

File Edit Format View Help

```
Project --- : Sample 2J
Prepared for:J.Q. Farmer                    TWP : 10        RNG : 20
Prepared by :J.Q. Engineer                  SEC : 2         FLD : 4
Checked by  : _____________________________ Date: __________


   ******************** AUXILIARY SPILLWAY DETAILS ********************
   Discharge determination: Calculated
   ------------------------------------------------------------------------
   | Auxiliary elev.    :   100.3 ^    Retardance ----------- :        E |
   | Bottom width, ft. :      10       Level sect. length, ft.:       25 |
   | Flow depth, ft. - :    0.09       Side slope ratio, n:1  :     3.00 |
   | EXIT CHANNEL -                                                      |
   |   Max. Vel.,fps - :     7.0       Retardance ----------- :        E |
   | Inlet Channel -       - 1 -       - 2 -                             |
   |    Length, ft. -- :     0.0            0.0                          |
   |    Slope, % ----- :    0.00           0.00                          |
   |-----------------------------------------------------------------------|
   | Flow, cfs ------- :    0.11       Exit Slope, % ---  Min.:        4 |
   |                                                      Max.:       30 |
   | Settled fill elev.:   102.3       Drawdown time, days-hrs:    0-0.6 |
   | Channel elev. --- :    69.4       Overall height, ft. -- :     32.9 |
   |  (downstream toe)                                                   |
   ------------------------------------------------------------------------
 ^ increased by user
```

Data Elements for the **Auxiliary Spillway Details** report include:
(Discharge determination: Calculated OR
Qe values from ASFILE)

Auxiliary Spillway

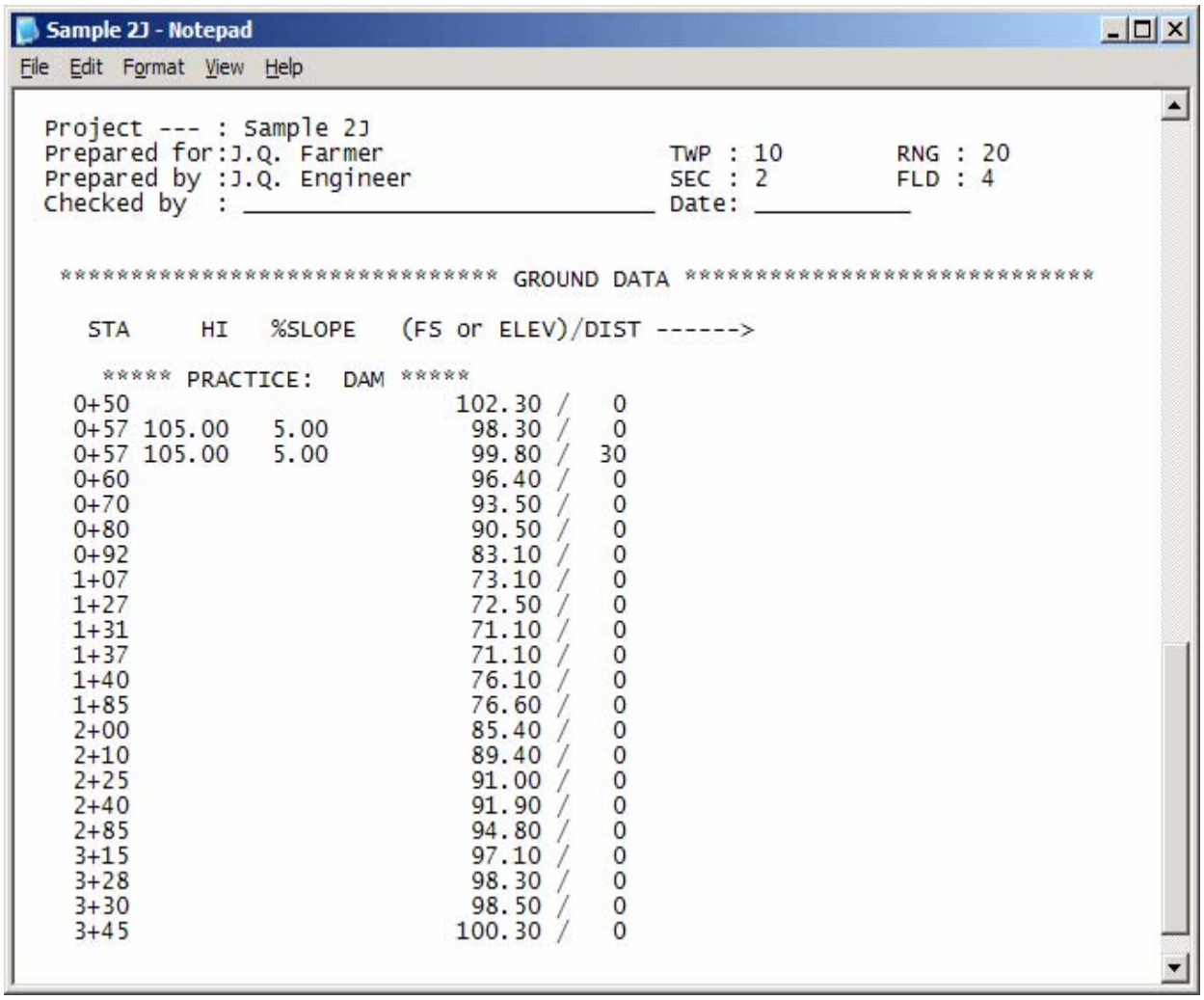
	Data element	**Source**
1.	Auxiliary elevation	Principal Routing, T7 - Auxiliary Elevation
2.	Bottom width (ft.)	Auxiliary Spillway, T8 - Desired bottom width (ft.)
3.	Flow depth (ft.)	Auxiliary Routing, T8 - Actual flow depth (Hp) (ft.)
4.	Retardance	Auxiliary Spillway, T8 - Retardance
5.	Level section length (ft.)	Auxiliary Spillway, T8 - Level section length (ft.)
6.	Side slope ratio (n:1)	Auxiliary Spillway, T8 - Side slope ratio

Exit Channel:

7.	Maximum Velocity (fps)	Auxiliary Spillway, T8 - Exit Channel, Permissable velocity (fps)

8. Retardance	Principal Routing, T7 - Exit Channel, Retardance
Inlet Channel:	
9. Length (ft.)	Auxiliary Spillway, T8 - Inlet Channel - Length (ft.)
10. Slope (%)	Auxiliary Spillway, T8 - Inlet Channel - Slope (%)
Auxiliary Routing	
11. Flow in Auxiliary, cfs	Auxiliary Routing, T9 - Flow in auxiliary
12. Settled fill elevation	Auxiliary Routing, T9 - Top of fill
13. Channel elev. (downstream toe)	Auxiliary Routing, T9 - Elevation: Channel (downstream toe)
14. Exit slope, % - Min.	Auxiliary Routing, T9 - Minimum exit slope (%)
15. Exit slope, % - Max.	Auxiliary Routing, T9 - Maximum exit slope (%)
16. Drawdown time (days-hrs.)	Auxiliary Routing, T9 - Drawdown time (days-hrs.)
17. Overall height (ft.)	Auxiliary Routing, T9 - Elevations: Overall height (ft.)

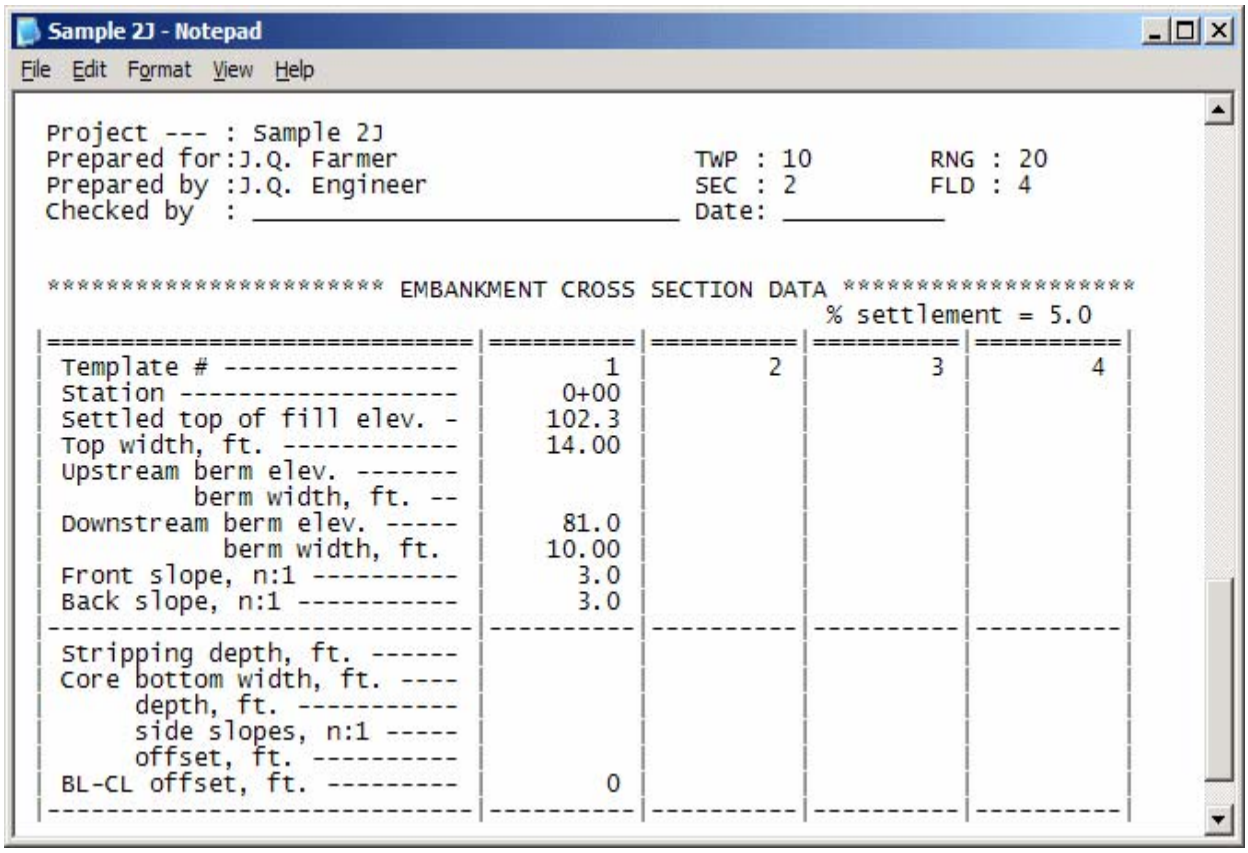
N Reports Rpt08 - Ground Data 02/11/2004



Ground Data data elements for this report were input on Ground Profile/Cross Section, T11

Data element	**Source**
1. Station	Ground Profile, T11 - Station
2. Height of Instrument	Ground Profile, T11 - Height of Instrument
3. Percent Slope	Ground Profile, T11 - Percent ground slope
4. Foresight or Elevation/Distance	Ground Profile, T11 - Elevation/Distance

N Reports Rpt09 - Embankment cross section data 02/26/2004



Sample 2J - Notepad

File Edit Format View Help

```
Project --- : Sample 2J
Prepared for:J.Q. Farmer                    TWP : 10        RNG : 20
Prepared by :J.Q. Engineer                  SEC : 2         FLD : 4
Checked by  : _____________________________ Date: __________

********************** EMBANKMENT CROSS SECTION DATA *********************
                                                      % settlement = 5.0
|============================|==========|==========|==========|==========|
| Template # ---------------- |        1 |        2 |        3 |        4 |
| Station ------------------- |     0+00 |          |          |          |
| Settled top of fill elev. - |    102.3 |          |          |          |
| Top width, ft. ------------ |    14.00 |          |          |          |
| Upstream berm elev. ------- |          |          |          |          |
|          berm width, ft. -- |          |          |          |          |
| Downstream berm elev. ----- |     81.0 |          |          |          |
|           berm width, ft.   |    10.00 |          |          |          |
| Front slope, n:1 ---------- |      3.0 |          |          |          |
| Back slope, n:1 ----------- |      3.0 |          |          |          |
|----------------------------|----------|----------|----------|----------|
| Stripping depth, ft. ------ |          |          |          |          |
| Core bottom width, ft. ---- |          |          |          |          |
|      depth, ft. ----------- |          |          |          |          |
|      side slopes, n:1 ----- |          |          |          |          |
|      offset, ft. ---------- |          |          |          |          |
| BL-CL offset, ft. --------- |        0 |          |          |          |
|----------------------------|----------|----------|----------|----------|
```

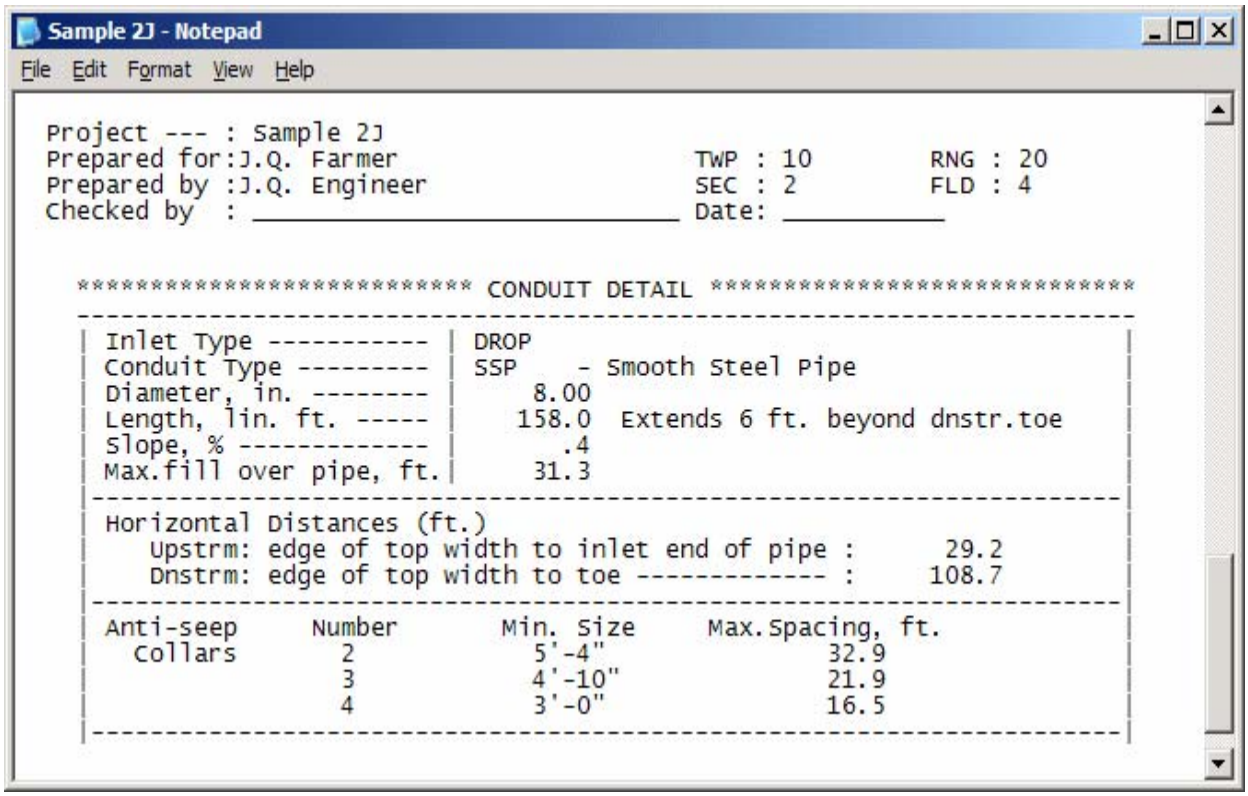
Data elements for the Embankment cross section data report (templates 1-3) include:

Embankment cross section data

	Data Element	**Source**
	% settlement =	Principal Spillway, T5
1.	Template #	Embankment Cross Section, T12
2.	Station	Ground Profile/Cross Section, T11
3.	Settled top of fill elev.	Embankment Cross Section, T12
4.	Top width (ft.)	Principal Spillway, T5
5.	Upstream berm elev.	Principal Spillway, T5
6.	Upstream berm width (ft.)	Principal Spillway, T5
7.	Downstream berm elev.	Principal Spillway, T5
8.	Downstream berm width (ft.)	Principal Spillway, T5
9.	Front slope (n:1)	Principal Spillway, T5
10.	Back slope (n:1)	Principal Spillway, T5
11.	Stripping depth (ft.)	Embankment Cross Section, T12
12.	Core bottom width (ft.)	Embankment Cross Section, T12

13. Core depth (ft.)	Embankment Cross Section, T12
14. Core side slopes (n:1)	Embankment Cross Section, T12
15. Core offset (ft.)	Embankment Cross Section, T12
16. BL-CL offset	Embankment Cross Section, T12

N Reports Rpt10 - Conduit detail 02/23/2004



Sample 2J - Notepad

File Edit Format View Help

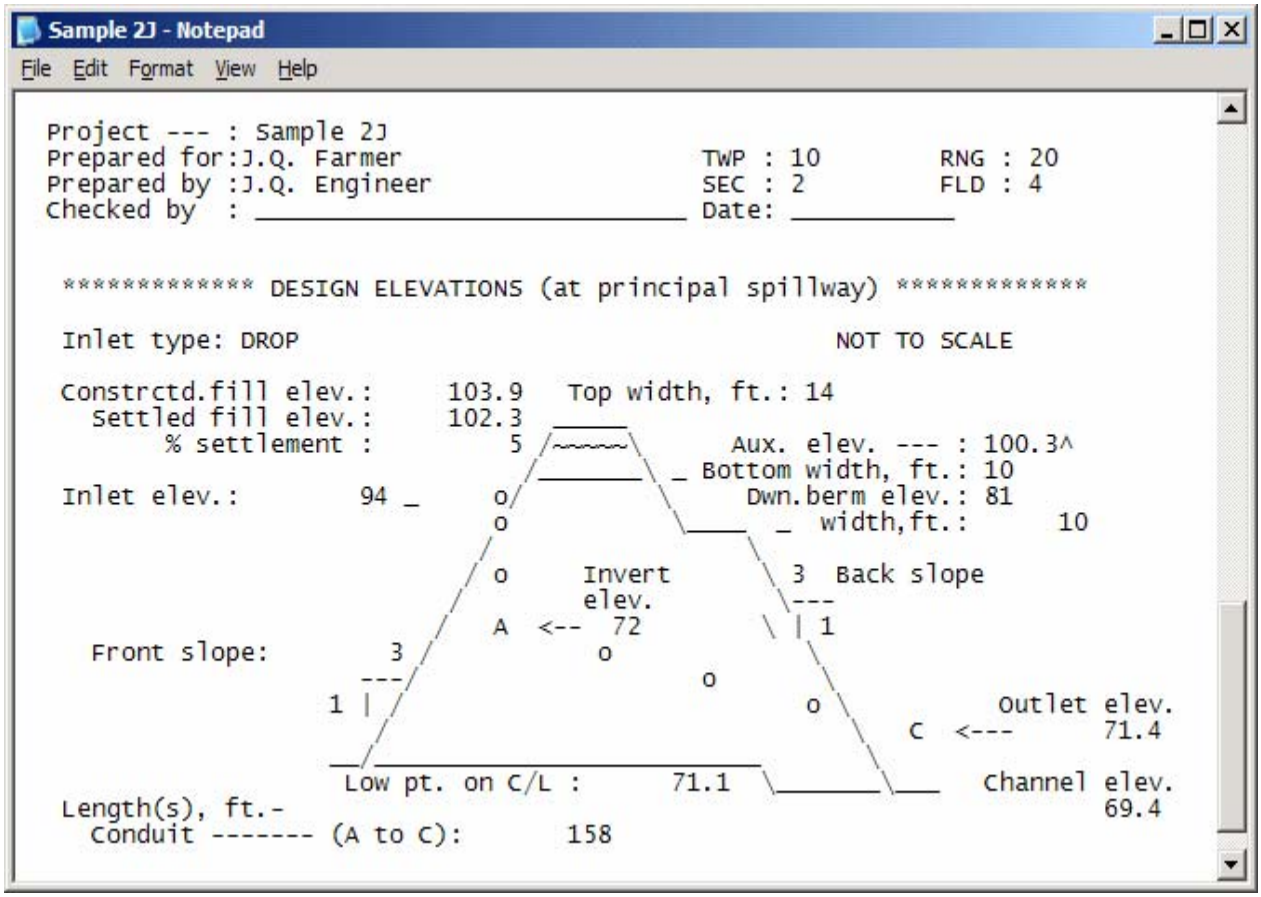
```
Project --- : Sample 2J
Prepared for:J.Q. Farmer                    TWP : 10        RNG : 20
Prepared by :J.Q. Engineer                  SEC : 2         FLD : 4
Checked by  : _____________________________ Date: __________


*************************** CONDUIT DETAIL *******************************
-------------------------------------------------------------------------
| Inlet Type ----------- | DROP                                         |
| Conduit Type --------- | SSP    - Smooth Steel Pipe                   |
| Diameter, in. -------- |    8.00                                      |
| Length, lin. ft. ----- |  158.0  Extends 6 ft. beyond dnstr.toe       |
| Slope, % ------------- |     .4                                       |
| Max.fill over pipe, ft.|    31.3                                      |
|-----------------------------------------------------------------------|
| Horizontal Distances (ft.)                                            |
|    Upstrm: edge of top width to inlet end of pipe :      29.2         |
|    Dnstrm: edge of top width to toe ------------- :     108.7         |
|-----------------------------------------------------------------------|
| Anti-seep     Number       Min. Size     Max.Spacing, ft.             |
|   Collars       2            5'-4"              32.9                  |
|                 3            4'-10"             21.9                  |
|                 4            3'-0"              16.5                  |
|-----------------------------------------------------------------------|
```

Data elements for the Conduit detail report include:

Conduit detail

Data element	**Source**
1. **Inlet Type**	Principal Spillway, T5 - Inlet type
2. **Conduit Type**	Conduit, T6 - Type
3. **Diameter (in.)**	Conduit, T6 - Diameter
4. **Length (lin.ft**.)	Conduit, T6 - Length (lin.ft.)
5. **Slope (%)**	Conduit, T6 on data input
6. **Max. fill over pipe (ft.)**	Calc. distance - Inlets - Aux Spillway & Principal Spillway
7. **Horizontal Distance (ft.):**	
a. Upstream: edge of top width to inlet end of pipe	calculated: (Aux. Routing, T9 - Top of fill) - Principal Spillway, (T7 - Inlet elevation)
b. Downstream: edge of top width to toe	calculated: (Aux. Routing, T9 - Top of fill) - (Aux. Routing, T9 - Channel (downstream toe))
8. **Anti-seep collars - Number**	calculated
Min. Size	calculated
Max. spacing (ft.)	calculated

N Reports Rpt11 - Design elevations 02/11/2004

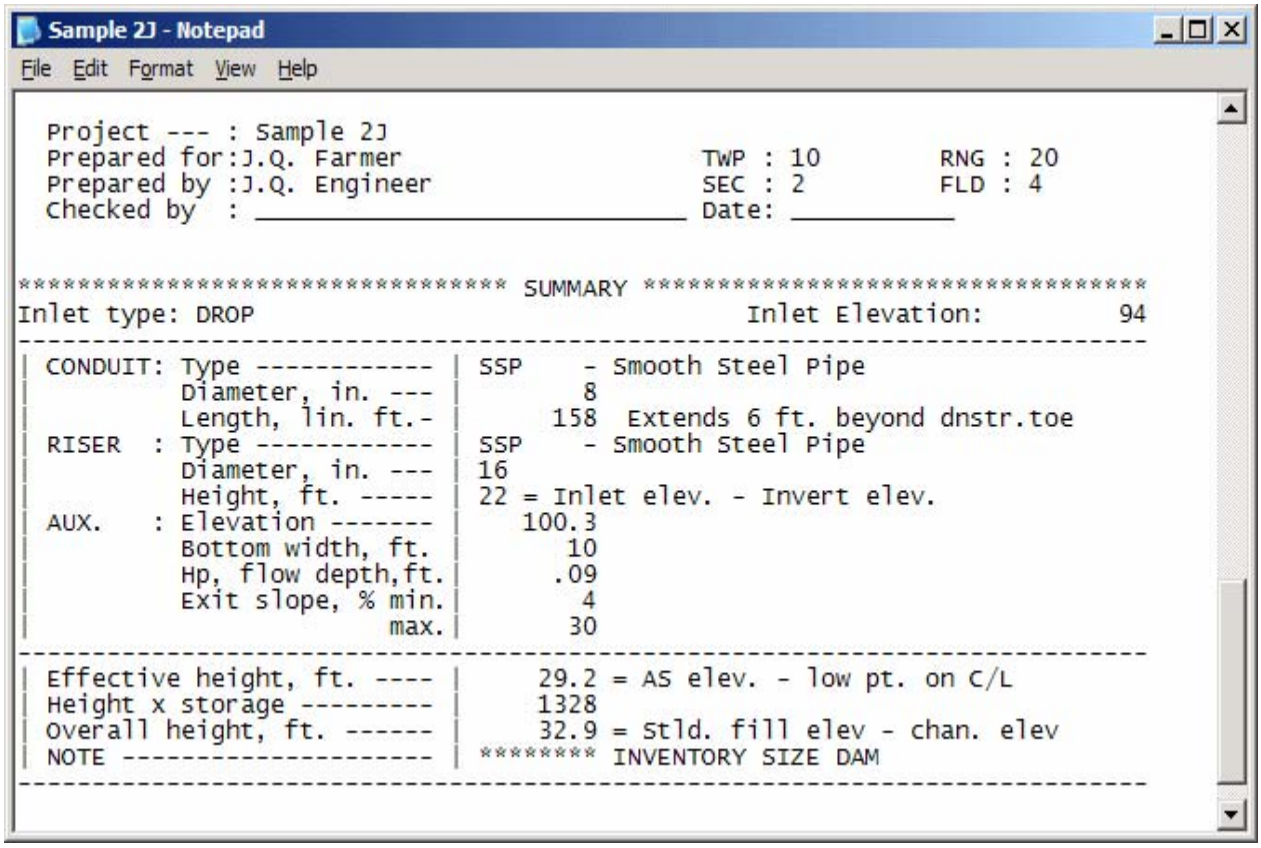


Data elements for Design Elevations (at principal spillway) report include:

Data element	**Source**
Inlet type	Principal Spillway, T5 - Inlet type
Constructed fill elevation	Calculated
Settled fill elevation	Calculated
% settlement	Principal Spillway, T5 - Settlement (%)
Inlet elevation	Principal Spillway, T5 - Inlet elevation
Front slope	Principal Spillway, T5 - Front slope (h:l)
Low pt. on C/L	Principal Spillway, T5 - CL/ low point Elevation
Length(s) (ft.) - Conduit	Conduit, T6 - Length (linear feet)

Top width (ft.)	Principal Spillway, T5 - Top width (ft.)
Auxiliary elevation	Principal Routing, T7 - Auxiliary Elevation
Bottom width (ft.)	Auxiliary Spillway, T8 - Desired bottom width (ft.)
Back slope	Principal Spillway, T5 - Back slope (h:l)
Outlet elevation	Principal Spillway, T5 - Outlet Elevation
Channel elevation	Principal Spillway, T5 - Channel Elevation

N Reports Rpt12 - Summary 02/23/2004



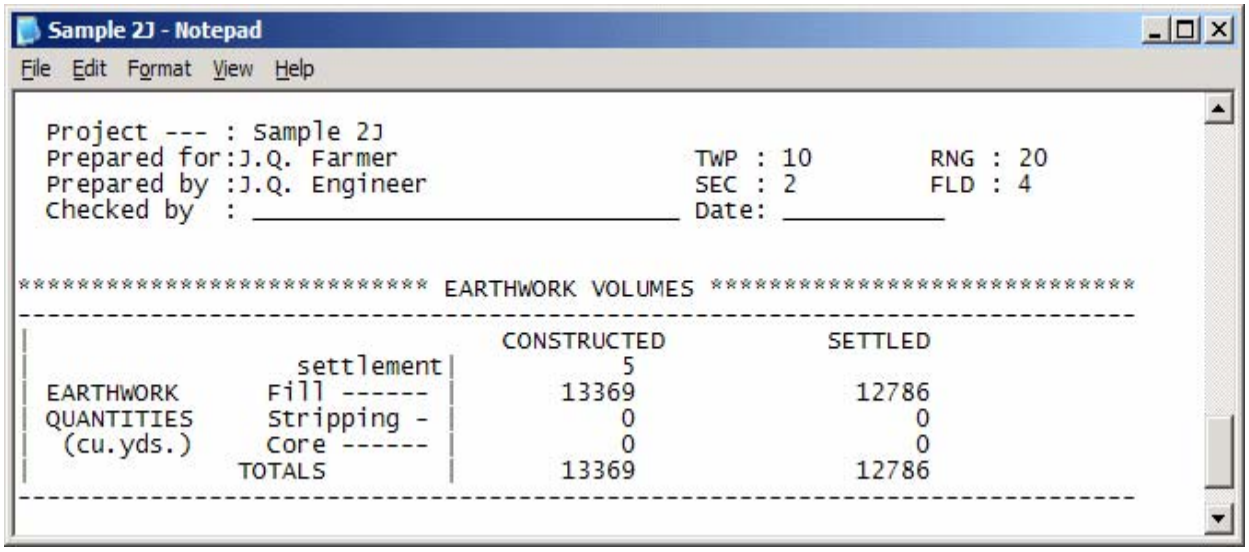
Data elements for the Summary report include:

Data element	**Source**
Inlet type	Principal Spillway, T5 - Inlet type
Inlet Elevation	Principal Spillway, T5 - Inlet elevation
Conduit:	
Type	Conduit, T6 - Conduit Type
Diameter (in.)	Conduit, T6 - Diameter (in.)
Length (lin.ft.)	Conduit, T6 - Length (lin.ft.)
Riser	
Type	Conduit, T6 - Riser Type
Diameter (in.)	Conduit, T6 - Diameter (in.)
Height (ft.)	Principal Spillway, T5 - Inlet elevation - Invert (barrel) elevation
Auxiliary	

Elevation	Principal Routing, T7 - Auxiliary Elevation
Bottom width (ft.)	Auxiliary Routing, T9 - Actual Bottom width (ft.)
Hp, flow depth (ft.)	Auxiliary Routing, T9 - Actual flow depth (Hp) (ft.)
Exit slope, % min.	Auxiliary Routing, T9 - Minimum exit slope (%)
Exit slope, % max.	Auxiliary Routing, T9 - Maximum exit slope (%)
Effective height (ft.)	Principal Routing, T7 - Effective Height
Height x storage	Principal Routing, T7 - Height x storage
Overall height (ft.)	Auxiliary Routing, T9 - Overall height

NOTE:

N Reports Rpt13 - Earthwork volumes
02/24/2004



Data elements for the Earthwork Volumes report include:

Earthwork Quantities (cu. yds.)
When no percent settlement, constructed fill and settled fill values for Fill, Stripping and Core will be equal.

Data element	**Source**
% settlement	
Constructed	Principal Spillway, T5 - Settlement (%)
Settled	N/A
Fill:	
Constructed	Embankment, T12 - Cubic yards fill on Status bar
Settled	Embankment, T12 - Settled top of fill elevation
Stripping:	
Constructed	Embankment, T12 - Strip on Status bar
Settled	N/A
Core:	
Constructed	Embankment, T12 - Core on Status bar
Settled	N/A
Totals:	
Constructed	Calculated for column
Settled	Calculated for column

N Reports Rpt14 - Pond Construction Checkout 02/26/2004

The Pond Construction Checkout Report consists of 3 parts:

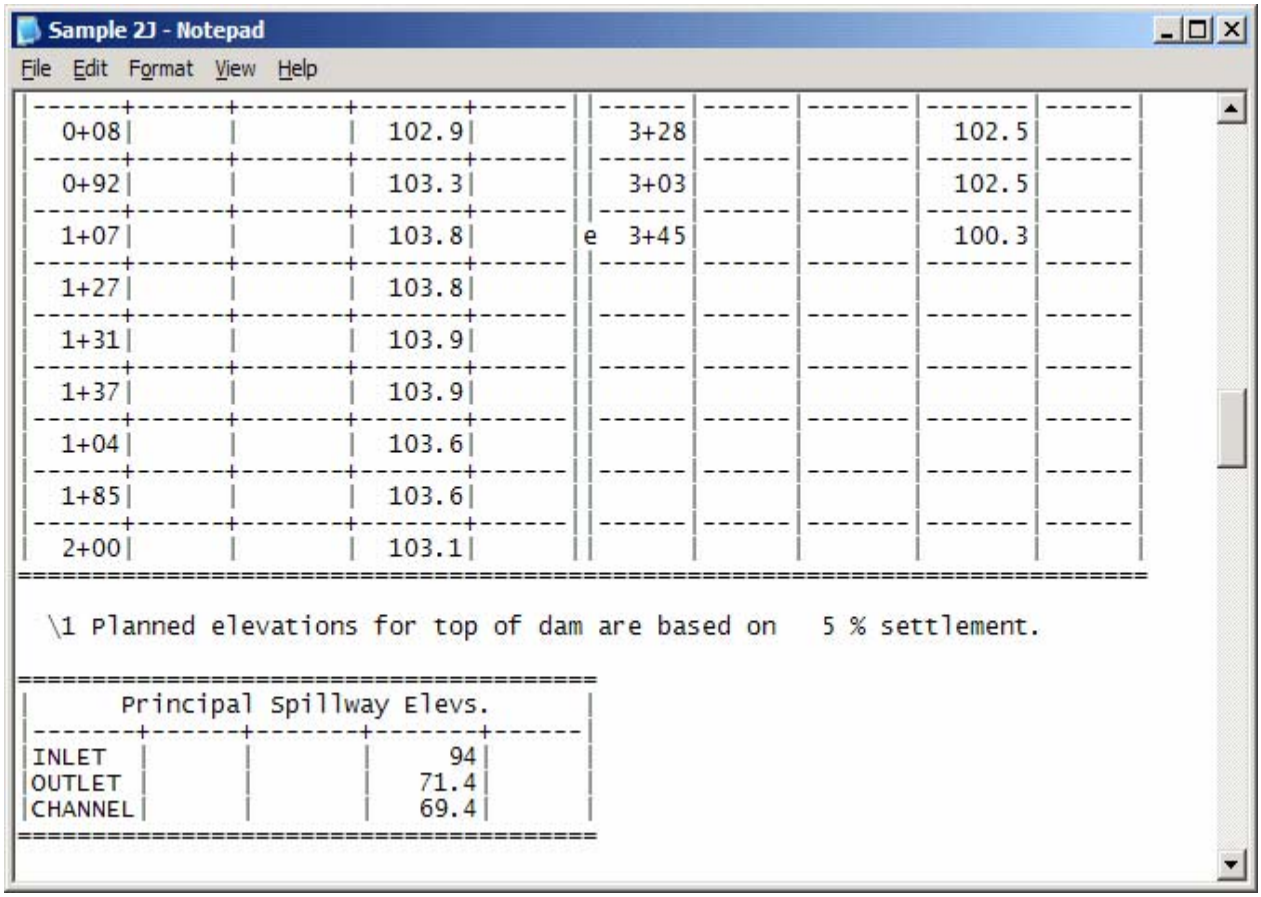
- **Centerline Profiles**
- **Cross Sections**
- **Pipe Spillway Info**

Centerline Profiles

Sample 2J - Notepad

File Edit Format View Help

```
  Project --- : Sample 2J
  Prepared for:J.Q. Farmer                    TWP : 10        RNG : 20
  Prepared by :J.Q. Engineer                  SEC : 2         FLD : 4
  Checked by  : _____________________________ Date: __________


************************ POND CONSTRUCTION CHECKOUT ***************************

       TBM # : Elev.  +  B.S.  =   H.I.    TBM Description
       _____ _______ _______ _______ ____________________________
       TBM # : Elev.  +  B.S.  =   H.I.    TBM Description
       _____  _______  _______  _______  ____________________________

============================== CENTERLINE PROFILES ==============================
|       | Rod   |Constr.| Plan.  |        ||       | Rod   |Constr.| Plan.  |        |
|  STA  | Rdg.  | Elev. | Elev.  | Dev.   ||  STA  | Rdg.  | Elev. | Elev.  | Dev.   |
|       | (FS)  |(HI-FS)|  \1    | (+/-)  ||       | (FS)  |(HI-FS)|  \1    | (+/-)  |
|======|======|=======|=======|======||======|======|=======|=======|======|
|       Embankment CL Profile          ||       Embankment CL Profile          |
|------+------+-------+-------+------||------|------|-------|-------|------|
|      |      |       |       |      ||  2+01|      |       | 102.9 |      |
|------+------+-------+-------+------||------|------|-------|-------|------|
|      |      |       |       |      ||  2+25|      |       | 102.9 |      |
|------+------+-------+-------+------||------|------|-------|-------|------|
|  0+57|      |       | 102.5 |      ||  2+04|      |       | 102.8 |      |
|------+------+-------+-------+------||------|------|-------|-------|------|
|  0+06|      |       | 102.6 |      ||  2+85|      |       | 102.7 |      |
|------+------+-------+-------+------||------|------|-------|-------|------|
|  0+07|      |       | 102.7 |      ||  3+15|      |       | 102.6 |      |
```



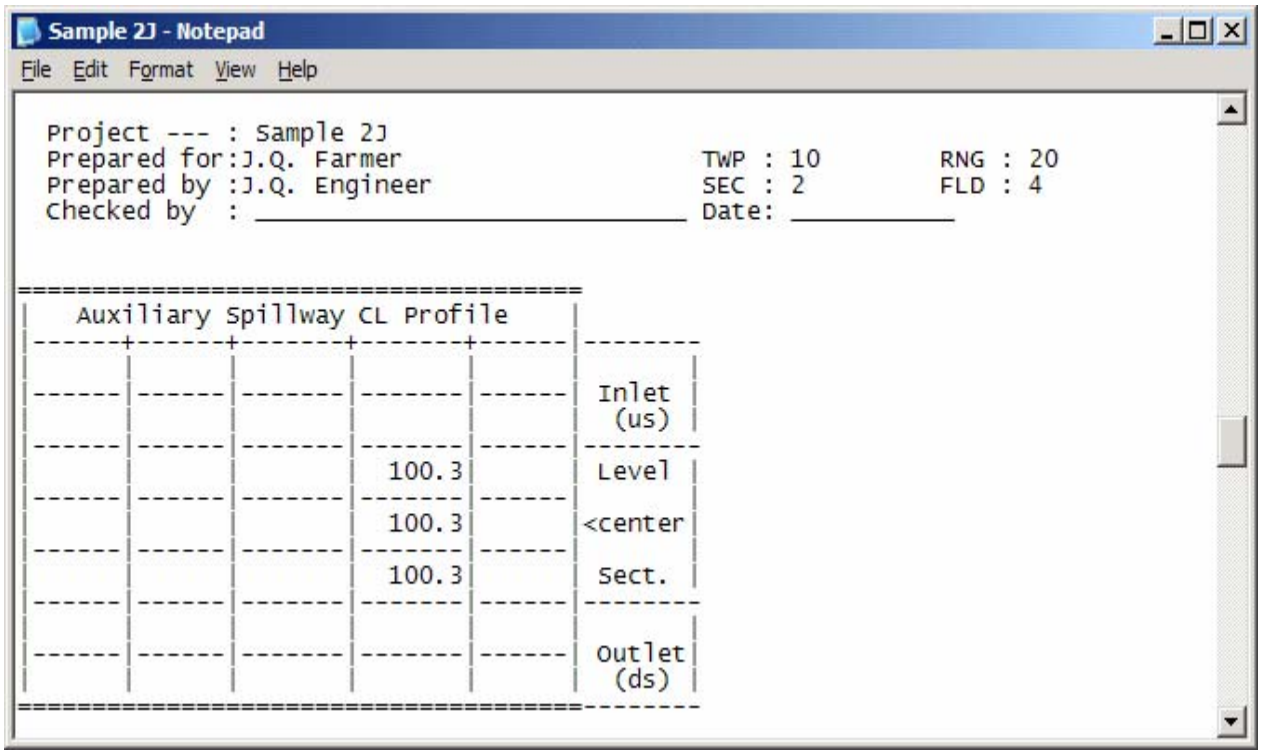
Sample 2J - Notepad

File Edit Format View Help

0+08			102.9		3+28			102.5	
0+92			103.3		3+03			102.5	
1+07			103.8	e	3+45			100.3	
1+27			103.8						
1+31			103.9						
1+37			103.9						
1+04			103.6						
1+85			103.6						
2+00			103.1						

\1 Planned elevations for top of dam are based on 5 % settlement.

Principal Spillway Elevs.				
INLET			94	
OUTLET			71.4	
CHANNEL			69.4	



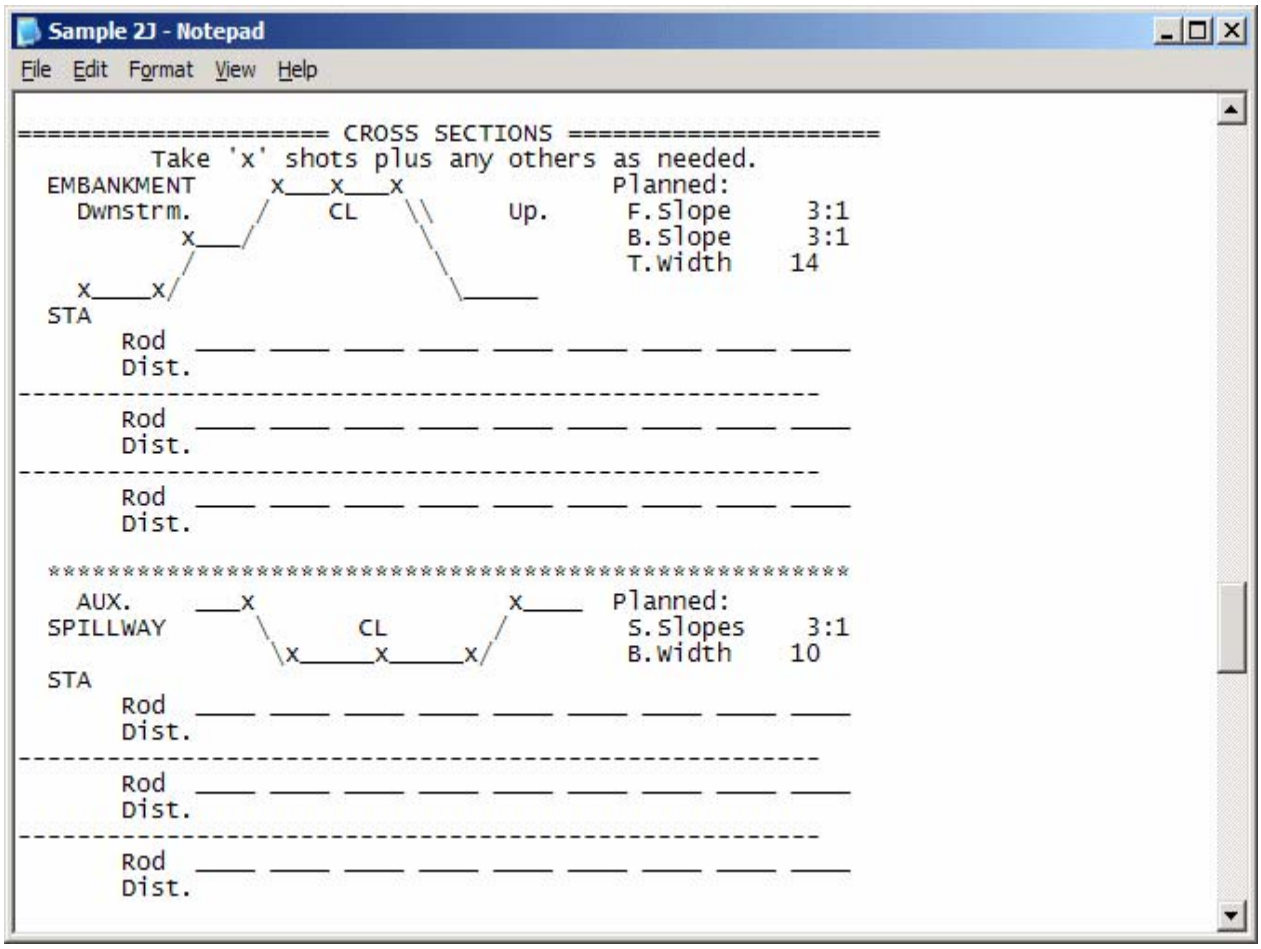
Sample 2J - Notepad

File Edit Format View Help

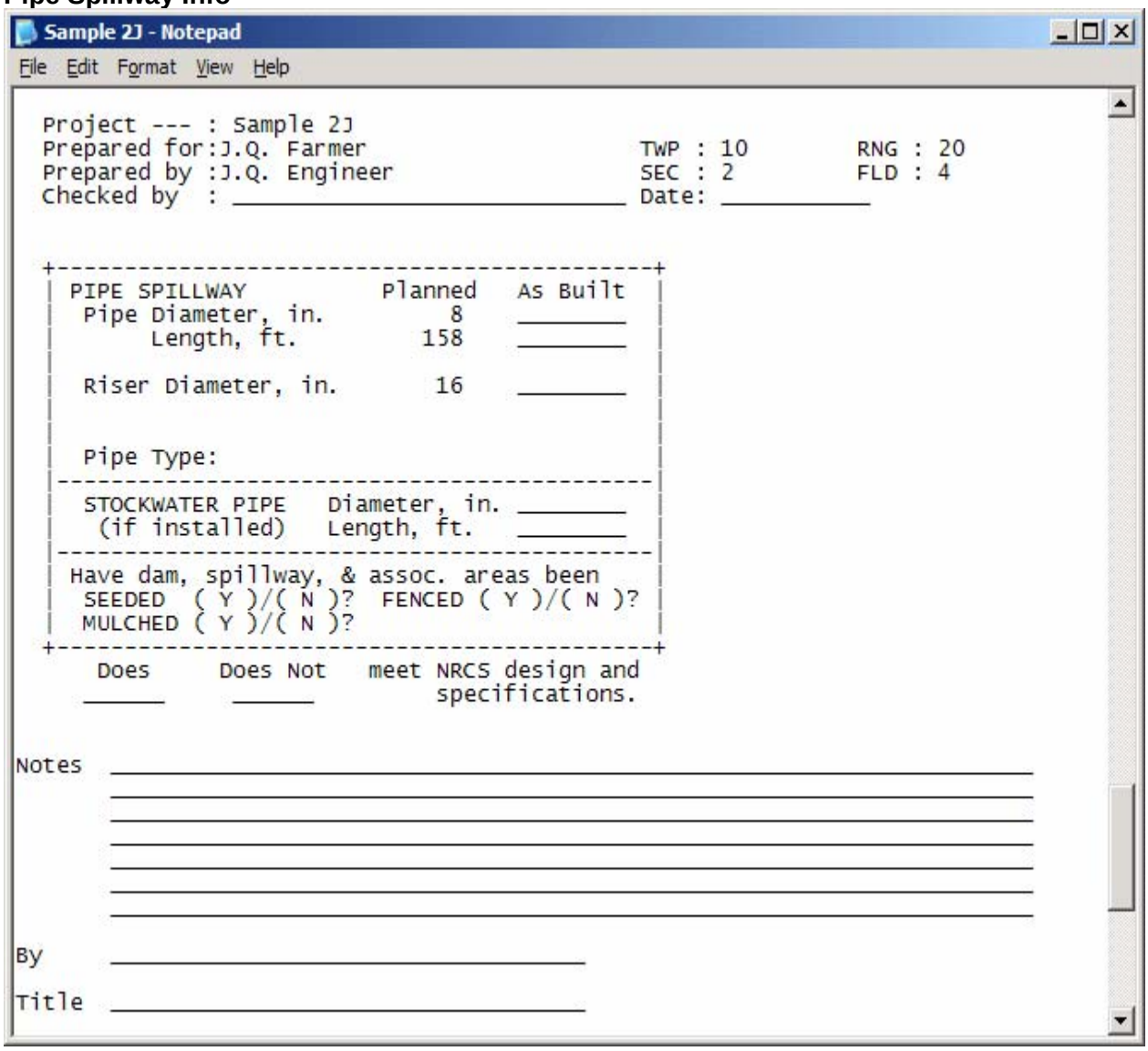
Project --- : Sample 2J
Prepared for:J.Q. Farmer TWP : 10 RNG : 20
Prepared by :J.Q. Engineer SEC : 2 FLD : 4
Checked by : _____ Date: _____

Auxiliary Spillway CL Profile					
					Inlet (us)
			100.3		Level
			100.3		<center
			100.3		Sect.
					Outlet (ds)

Cross Sections



Pipe Spillway Info



Sample 2J - Notepad

File Edit Format View Help

```
Project --- : Sample 2J
Prepared for:J.Q. Farmer                    TWP : 10        RNG : 20
Prepared by :J.Q. Engineer                  SEC : 2         FLD : 4
Checked by  : _____________________________ Date: ___________


+-------------------------------------------+
| PIPE SPILLWAY          Planned   As Built  |
|  Pipe Diameter, in.        8    ________  |
|       Length, ft.        158    ________  |
|                                           |
|  Riser Diameter, in.      16    ________  |
|                                           |
|                                           |
|  Pipe Type:                               |
|-------------------------------------------|
|  STOCKWATER PIPE   Diameter, in. ________ |
|   (if installed)   Length, ft.   ________ |
|-------------------------------------------|
| Have dam, spillway, & assoc. areas been   |
|  SEEDED  ( Y )/( N )?  FENCED ( Y )/( N )?|
|  MULCHED ( Y )/( N )?                     |
+-------------------------------------------+
    Does     Does Not   meet NRCS design and
   ______     ______         specifications.


Notes  ____________________________________________________________________
       ____________________________________________________________________
       ____________________________________________________________________
       ____________________________________________________________________
       ____________________________________________________________________
       ____________________________________________________________________
       ____________________________________________________________________

By     _____________________________________

Title  _____________________________________
```

Pond Construction Checkout report:

Centerline Profiles

Data element	**Source**
1. Embankment Centerline Profile	
a. **Station**	**Ground Profile/Cross Section, T11**
b. Rod Rdg.(FS)	Space for notes
c. Constr. Elev. (HI-FS)	Space for notes
d. **Plan. Elev.**\1	calculated - Planned elevation for top of dam

e. Dev. (+/-)	Space for notes
2. Principal Spillway Elevations	
a. **Inlet**	Space for notes
b. **Outlet**	Space for notes
c. **Channel**	Space for notes
3. Auxiliary Spillway Centerline Profile.	
a. Inlet (us)	1) Space for notes
	2) Space for notes
b. **Level center section**	**1) Aux. Spillway elevation**
	2) Aux. Spillway elevation
	3) Aux. Spillway elevation
c. Outlet (ds)	1) Space for notes
	2) Space for notes

Cross Sections

Data element	**Source**
1. Embankment	
a. Downstream	Space for notes
b. Center Line	Space for notes
c. Upstream	Space for notes
d. Planned	
Front Slope	**Embankment Cross Section, T12 - Front Slope**
Back Slope	**Embankment Cross Section, T12 - Back Slope**
Top Width	**Embankment Cross Section, T12 - Top Width**
e. Station	Space for notes
1) Rod	Space for notes
2) Dist.	Space for notes
2. Auxiliary Spillway	
a. Center Line	
b. Planned	
S. Slopes	**Aux. Spillway, T8 - Side Slope ratio**
B. Width	**Aux. Spillway, T8 - Desired bottom width**
c. Station	Space for notes
1) Rod	Space for notes
2).Dist.	Space for notes

Pipe Spillway Info

Data element	**Source**
1. **Pipe Spillway**	
Planned:	
a. Pipe Diameter (in.)	Conduit, T6 - Diameter
b. Pipe Length (ft.)	Conduit, T6 - Length
c. Riser Diameter (in.)	Conduit, T6 - Diameter

d. Pipe Type	Conduit, T6 - Type
As Built:	
a. Pipe Diameter (in.)	Space for notes
b. Pipe Length (ft.)	Space for notes
c. Riser Diameter (in.)	Space for notes
d. Pipe Type	Space for notes
2. **Stockwater Pipe**	
a. Diameter (in.)	Space for notes
b. Length (ft.)	Space for notes
3. **Dam, Spillway & Assoc. Areas**	
a. Seeded: Y?	Space for notes
N?	Space for notes
b. Fenced: Y?	Space for notes
N?	Space for notes
c. Mulched: Y?	Space for notes
N?	Space for notes
4. Meet NRCS Design Specs	
a. Y	Space for notes
b. N	Space for notes
5. Notes	Space for notes
6. By	Space for notes
7. Title	Space for notes
8. Date	Space for notes

W Warning and Error Messages 01/27/2005

WinPond User messages include three types of messages:

I.	**Alert:**	**Important information message**
II.	**Error:**	**Message generated when normal system operations are incomplete**
3.	**Question:**	**Query messages used bt WinPond to control further processing**

The **Tab** on which this message was generated is located at the right end of the Message line.

The **Action** to be taken by the user is displayed following the message.

Msg # Message

Msg 1 **WinPond Error** **Tab:** N/A
An error occurred while reading:
XXXXXXX.XXX
Please reinstall WinPond.

Action: Please reinstall WinPond.
A file that WinPond needs to continue processing is missing.

Msg 2 **WinPond Question** **Tab: Tools/Options: General**
The specified folder was not found.

Do you want the folder to be created?

Action: Click Y/N

_____

Msg 3 **WinPond Error** **Tab: Tools/Options: General**
WinPond was not able to create the folder as specified.

Please confirm that you have write access to the device and existing path.

Action: Click OK, and contact System Admin. to confirm access.

Msg 4 **WinPond Error** **Tab:** N/A
The project file was not saved due to one of the following conditions:

1. The path set in the Tools|Options|Data Path was not set to a

valid path

2. **The path entered during a save operation cannot be found.**
3. **The file was be saved due to a full or write protected disk.**
4. **The user may not have write access to the chosen path.**

Action:

1. Check the datapath entered in Tool|Options|DataPath, or change the datapath.
2. Create the path that was requested or change the path to one that already exists.
3. Contact System Admin. to check the status of the disk.
4. Contact System Admin. to check the write access on the chosen path.

Msg 5 **WinPond Error** **Tab:** N/A

The project file specified contains no data.

Action: Select another project file

Msg 6 **WinPond Error** **Tab:** N/A

This project file was created by a development version of WinPond and is not supported by this version.

Action: Create a new project file in place of this file. Use the current version of WinPond.

Msg 7 **WinPond Alert** **Tab: Principal Routing (T7)**

Status of Principal Spillway (P.S) Routing for each conduit and riser pipe selected on Conduit (T6):

Principal Spillway Storm
Peak Flow, cfs:
nnnnn,nn
Trial n:
computing pipe flow
routing
DONE

On entry to the Principal Routing Tab (T7) Message Number 7 will always appear. This message describes the status of the Principal Routing that is taking place for each conduit and riser pipe selected on the Conduit Tab (T6). For a trial grouping beginning with "Trial" and ending just before

the next trial, if 1-3 , messages appear after "DONE", passage through to the next tabs will not be allowed.

Until a trial with the message(s) has been fixed or removed, passage through to the next tabs will not be allowed.

To remove a trial, highlight and backspace the Conduit Type on the Conduit tab (T6).

Action: Recheck input

Principal Spillway Storm
Peak flow, cfs: nnnnn.nn

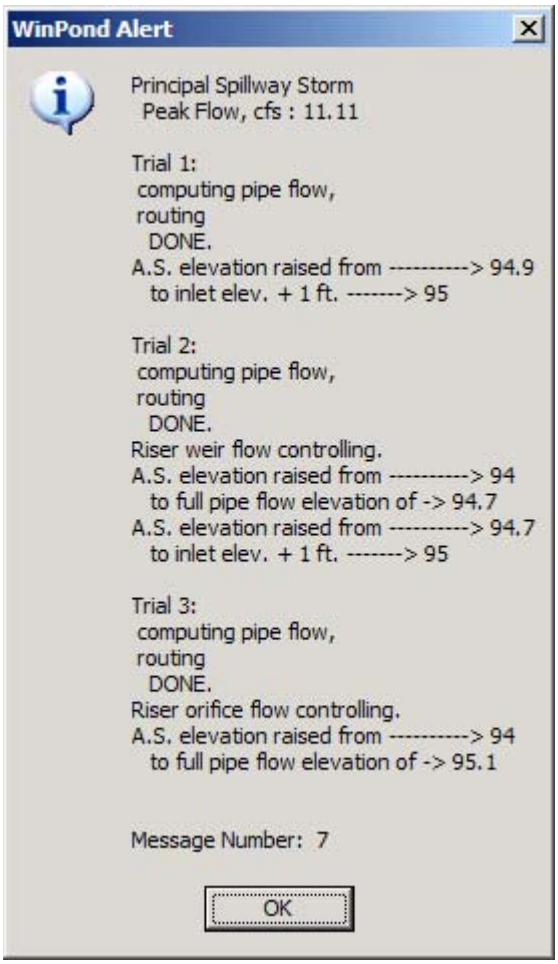
Trial 1:
computing pipe flow, 1 msg
routing
DONE
Related messages (0-2) 0-2 msgs

Trial 2:
computing pipe flow,
routing
DONE
Related messages (0-2)

Trial 3:
computing pipe flow,
routing
DONE
Riser orifice flow controlling.
Related messages (0-2)

Message Number 7

OK



Action:

1. Test each of the Principal Spillway trials (3) for each of the 5 conduit conditions.

2. Test each of the Principal Spillway trials (3) for 2 Auxiliary Spillway conditions.

Message 7 in this dialog box displays the status of the Principal Spillway Routing taking place for each conduit selected on Conduit (T6). For each trial the routing message always appears.

This message can contain 3 sub-messages. Each sub-message relates to the trials selected on Conduit (T6). Conduit related conditions can include 1 message from 5 for a conduit condition in a trial.

For each trial after "DONE", Conduit related conditions can include

from 0 of 2 messages.

3. For a trial grouping beginning with "Trial" and ending just before the next trial, if 1-3 messages appear after "DONE", passage through to the next tabs will not be allowed.

   Until a trial with the message(s) has been fixed or removed, passage through to the next tabs will not be allowed.

   To remove a trial, highlight and backspace the Conduit Type on the Conduit tab (T6).

   At least 1 trial must be present to continue to the next tabs.

Conduit Conditions

PSS Msg A WinPond Alert
Weir flow controlling.
Full pipe flow could not be obtained!
Riser may be too small
Recheck inputs.

This message displays the status of Weir flow controlling.
Full pipe flow could not be obtained. Riser may be too small.

Action: Recheck inputs to this process.

PSS Msg B WinPond Alert
Slug flow controlling.
Full pipe flow could not be obtained!
Riser may be too small
Recheck inputs.

This message displays the status of Slug flow controlling.
Full pipe flow could not be obtained. Riser may be too small.

Action: Recheck inputs to this process.

PSS Msg C WinPond Alert
Riser weir flow controlling.
Full pipe flow could not be obtained!
Riser may be too small
Recheck inputs.

This message displays the status of riser weir flow controlling.
Full pipe flow could not be obtained. Riser may be too small.

Action: Recheck inputs to this process.

PSS Msg D WinPond Alert
Riser orifice flow controlling.
Full pipe flow could not be obtained!
Riser may be too snall
Recheck inputs.

This message displays the status of riser orifice flow controlling.
Full pipe flow could not be obtained. Riser may be too small.

Action: Recheck inputs to this process.

PSS Msg E WinPond Alert
Conduit orifice flow controlling.
Full pipe flow could not be obtained!
Riser may be too small
Recheck inputs.

This message displays the status of conduit orifice flow controlling.
Full pipe flow could not be obtained. Riser may be too small.

Action: Recheck inputs to this process.

Auxiliary Spillway Conditions

ASE Msg F WinPond Alert
Auxiliary Spillway elevation raised
from nnnnn.n to full pipe flow
elevation of nnnnnn.n

This message displays the status of Auxiliary Spillway elevation.

Action: Click OK

ASE Msg G WinPond Alert
Auxiliary Spillway elevation raised
from nnnnn.n to inlet
elevation + n.n feet nnnnnn.n

This message displays the status of Auxiliary Spillway elevation.

Action: Click OK

Msg 8 **WinPond Error** **Tab:** N/A
An error occurred in the compilation of elevation-storage data for this project. (WinPond was trying to save the project file.)

Action: Enter new elevation-storage data on Elevation-Storage (T2).

Msg 9 **WinPond Error** **Tab: N/A**
WinPond was not able to decompile ground points for this project. (WinPond was trying to open the project file.)

Action: The current project file is corrupted.
Discard current project. Do not save the current project.
Start a new WinPond project!

Msg 10 **WinPond Error** **Tab:** N/A
An error occurred in the compilation of the cross section data for this project.

Action: Re-enter Cross section data on Embankment Cross Section (T12).

Msg 11 **WinPond Error** **Tab: N/A**
An error occurred in the compilation of ground data for this project.

Action: Re-enter ground data on Ground Profile Cross Section (T11).

Msg 12 **WinPond Error** **Tab: N/A**
An error occurred in the compilation of the inlet data for this project.

Action: Re-enter any missing data found on Conduit (T6), Principal Routing (T7), Auxiliary Spillway (T8) and Auxiliary Routing (T9). The missing data are affecting calculations.

Msg 13 **WinPond Error** **Tab: N/A**
An error occurred in the compilation of the RCN data when compiling data into this project.

Action: Re-enter RCN data on Runoff Curve Number Determination dialog accessed through Hydrology (T3).

Msg 14 **WinPond Error** **Tab: N/A**
An error was found in the decompilation of the legacy Pond format ground points when decompiling data from the project file.

Action: The current project file is corrupted.
Discard current project. Do not save the current project.
Start a new WinPond project!

Msg 15 **WinPond Alert** **Tab: Conduit (T6)**
The Riser Diameter was set to a value that is smaller than the Conduit Diameter. WinPond will automatically correct the Riser Diameter to be at least as big as the Conduit Diameter.

Action: Click OK.

Msg 16 **WinPond Alert** **Tab: Auxiliary Routing (T9)**
Auxiliary spillway bottom width value was restricting. Determination of the depth value was not possible.

Action: Change the populated value for Desired bottom width (feet) or for Desired flow depth [HP] on Auxiliary Spillway (T8).

Msg 17 **WinPond Error** **Tab: Auxiliary Routing (T9)**
Configuration was not found in the ASFILE. The combination of Level section length and Retardance was not found.

Action: Change Retardance and Conduit Length on Auxiliary Spillway (T8).

Msg 18 **WinPond Error** **Tab: Auxiliary Routing (T9)**

An error occurred while reading the ASFILE file.

Action: Re-install WinPond.

Msg 19 **WinPond Alert** **Tab: Auxiliary Routing (T9)**
The minimum exit slope of nn is greater than the maximum exit slope
of nn. This alert is due to the permissible velocity and/or retardance values entered for the exit slope.

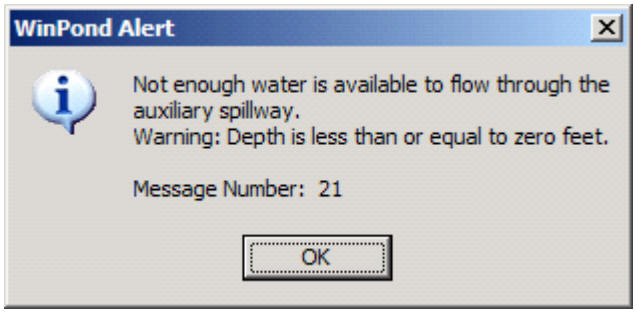
Action: Re-enter Permissible velocity and/or Retardance for Exit slope on Auxiliary Spillway (T8).

Msg 20 **WinPond Alert** **Tab: Auxiliary Routing (T9)**
Possibly large depth flow encountered.
Warning: Depth is greater than 1.5 feet.

Action: Click OK.

Msg 21 **WinPond Alert** **Tab: Auxiliary Routing (T9)**
Not Enough Water is available to flow through the Auxiliary Spillway (AS).
Warning: Depth is less than or equal to zero feet.

Action: Click OK.



Msg 22 **WinPond Error** **Tab: Ground Profile/Cross Section (T11)**
All templates cannot be deleted. At least 1 cross-section must remain
on Embankment Cross Section (T12). One template will remain.

Action: Click OK.

Msg 23 Not Used

Msg 24 **WinPond Alert** **Dialog: Runoff Curve Number Determination**

Percentage was selected as the data model. The numbers that were entered in fields on this dialog box must add up to 100 in order to represent 100%.

Action: Enter numbers adding up to 100 on the Runoff Curve Number Determination dialog.

Msg 25 **WinPond Alert** **Tab: Hydrology (T3)**
Drainage area must be 1 to 2000 acres.

Action: Enter a value from 1 to 2000 acres into Drainage Area on Hydrology (T3).

Msg 26 **WinPond Error** **Tab: N/A**
The WinPond program cannot start.

Action: Please re-install WinPond.

Msg 27 **WinPond Question** **Tab: N/A**
Would you like to save the project you are working on?

Action: Click Y/N

Msg 28 **WinPond Alert** **Tab: Hydrology (T3)**
Flow Length must have a value greater than 0.

Action: Enter a value greater than zero in Flow Length on Hydrology (T3).

Msg 29 **WinPond Alert** **Tab: Hydrology (T3)**
Runoff Curve Number must be a value between 59 and 98.

Action: Click OK, and enter a value between 59 and 98 in Runoff Curve Number (RCN) on Hydrology (T3).

Msg 30 **WinPond Alert** **Tab: Hydrology (T3)**
Time of Concentration must have a value greater than 0.

Action: Click OK, and enter a value greater than zero in Time of Concentration on Hydrology (T3).

Msg 31 **WinPond Alert** **Tab: Hydrology (T3)**
Watershed Slope must have a value between 0.5% and 64%.

Action: Click OK, and enter a value between 0.5% and 64%.in Watershed slope on Hydrology (T3).

Msg 32 **WinPond Alert** **Tab: Principal Routing (T7)**
Auxiliary Elevation cannot be lower than nnn.n feet.

Action: Click OK, and enter a value above nnn.n feet in Auxiliary Elevation on Principal Routing (T7).

Msg 33 **WinPond Alert** **Tab: Auxiliary Spillway (T8)**
To use this option, conduit area must be greater than or equal to 3 square feet.

Action: On the Conduit Tab (T6) change the value of either Diameter (round) or Width and Height (square or rectangular).

Msg 34 **WinPond Alert** **Tab: Auxiliary Routing (T9)**
Top of Fill must be greater than or equal to n.n feet.

Action: Click OK

Msg 35 **WinPond Alert** **Tab: Ground Profile/Cross Section (T11)**

The station just entered is a duplicate. Duplicate stations are not allowed. The duplicate will be deleted.

Action: Click OK.

Msg 36 **WinPond Error** **Tab: Reports (T14)**
An error in reports generation has occurred due to missing data. Enter any missing data before attempting to generate a report.

Action: Enter any missing data before attempting to generate a report. See Topic N Reports to locate the source of data for a specific report.

Msg 37 **WinPond Error** **Tab: Ground Embankment/Intersection (T13)**
Reports Error
Ground data is missing. Enter Ground Data on Ground Profile /Cross Section (T11).

Action: Enter ground data on the Ground Profile/Cross Section (T11).

Msg 38 **WinPond Alert** **Tab: Ground Embankment/Intersection (T13)**

Auxiliary Spillway centerline must be less than or equal to N+NN or greater than or equal to N+NN

Action: Click OK, and change the Auxiliary Spillway centerline value on Ground/Embankment Intersection (T13).

Msg 39 **WinPond Error** **Tab: N/A**
The WinPond online help file was not found or has become corrupted.

Action: Reinstall WinPond

Msg 40 **WinPond Alert** **Tab: Ground/Embankment Intersection (T13)**
Auxiliary Spillway Centerline is out of range.

Action: Click OK, and change the value in the dam Center Line Station data entry box on Ground/Embankment Intersection (T13). See label next to Dam Centerline Station data entry box for required range of values on Ground/Elevation Embankment Intersection Tab (T13)

Msg 41 **WinPond Alert** **Tab: Elevation-Storage (T2)**
Pool Area must be larger than n.nn on Elevation-Storage (T2). WinPond will reset the value of Pool Area to n.nn.

Action: Click OK.

Msg 42 **WinPond Alert** **Tab: Embankment Cross Section (T12)**
One template must always be present on the Embankment Cross Section (T12). WinPond will not delete the last template.

Action: Click OK.

Msg 43 **WinPond Alert** **Tab: Ground Profile/Cross/Cross Section (T11)**
At least one station must be present on the Ground Profile/Cross Section (T11). WinPond will not delete the last station.

Action: Click OK.

Msg 44 **WinPond Error** **Tab: N/A**
An error has occurred while loading the project file. The Project file may be corrupt.

Action: Discard current project. Do not save the current project.
Start a new WinPond project!

Msg 45 **WinPond Error** **Tab: Elevation-Storage (T2)**
Not able to load Elevation-Storage Data. The Project file may be corrupt.

Action: Discard current project. Do not save the current project.
Start a new WinPond project!

Msg 46 **WinPond Error** **Tab: Elevation-Storage (T2)**
Pool Area must be less than nnnn.nn

Action: Pool Area on Elevation-Storage is too large. Enter a new smaller value for Pool Area.

This situation occurs when entered Elevation data and Pool Area data (on row one) are followed a new row with lower Elevation and larger Pool Area. When new smaller elevation data is entered (on row 2) below a previously entered elevation, then the Pool Area on this second row must be smaller than the previously entered Pool Area (on row one).

Correct Elevation and Pool Area relationship:

E.g., Elevation	Pool Area
70.0	1.0
68.0	**0.8**

Msg 47 **WinPond Alert** **Tab: N/A File/Open**
This project was created with a DOS version of the Pond program. Saving the current project using the name of the DOS version will convert the current project to the format used by WinPond. The current file will then not be compatible with the DOS version that created the project.

Do you want to convert this project to the WinPond format?

Action: Click Y/N

Msg 48 **WinPond Alert** **Tab: Ground Profile/Cross Section (T11)**
The distance just entered is a duplicate. Duplicate distances are not allowed. The duplicate will be deleted.

Action: Enter a new set of point data (Elevation and Distance) with a different distance.

Msg 49 **WinPond Alert** **Tab: Auxiliary Spillway (T8)**
Desired Bottom Width must be greater than or equal to XXX.X and less than or equal to YYY.Y. The value of bottom width will be set to YYY.Y.

Action: Confirm that the new Desired Bottom Width is valid.
Click OK.

Values for Desired Bottom Width are defined in Options/ Auxiliary Spillway as
Minimum Bottom Width (XXX.X) and Maximum Bottom Width (YYY.Y).

Msg 50 **WinPond Alert** **Tab: Conduit (T6)**
The diameter of the riser should be at least 1.25 times the diameter of the pipe barrel.

Action: Increase the diameter of the riser pipe.
Click OK.

Msg 51 **WinPond Alert** **Tab: Conduit (T6)**
Trial XX. The pipe slope is greater than nnn.n. An elbow may be needed.

Action: Confirm the use of an elbow for the Principal Spillway.
Click OK.

The pipe slope should be less than or equal to 7 ft. vertical to 1 ft. horizontal for optimum flow.

Msg 52 **WinPond Alert** **Tab: Conduit (T6)**
Trial XX. The slope of the outlet section is greater than nnn.n.

Action: Confirm the slope of the outlet section of the principal spillway.
Click OK.

The pipe slope should be less than or equal to 7 ft. vertical to 1 ft. horizontal for optimum flow.

Msg 53 **WinPond Alert** **Tab: Ground Profile/Cross Section (T11)**

All ground points must have values in both Elevation and Distance fields

Action: Confirm that all points have data in both Elevation and Distance fields.
Click OK.

Msg 54 **WinPond Alert** **Tab: Elevation-Storage (T2)**

The Pool Bottom Elevation entered is above the lowest elevation entered on Elevation-Storage (T2). Resetting pool bottom to nnn feet.

Action: No action required.

Msg 55 **WinPond Alert** **Tab: Elevation-Storage (T2)**

The Pool Bottom Elevation entered is above the lowest elevation entered on
Elevation-Storage tab (T2). Resetting Pool Bottom to xxx.xx feet.

Action: No action is required**.**
Pool Bottom Elevation on Elevation-Storage is too large. If wanted, enter a new smaller value for Pool Bottom Elevation.

Msg 56 **WinPond Alert** **Tab: Aux Spillway (T8)**

The Desired Bottom Width on the Auxiliary Spillway is too large. The ratio
between Flow Depth and Bottom Width exceeds 35:1.
Consider decreasing the value of Bottom Width.

Action: No action is required.
Desired Bottom Width on Aux Spillway (T8) is too large. If wanted enter a new smaller value for Desired Bottom Width.

Y WinPond Default Processing 08/25/2004

WinPond must have a default.prj file in order to run correctly. This file can be changed, but not deleted.

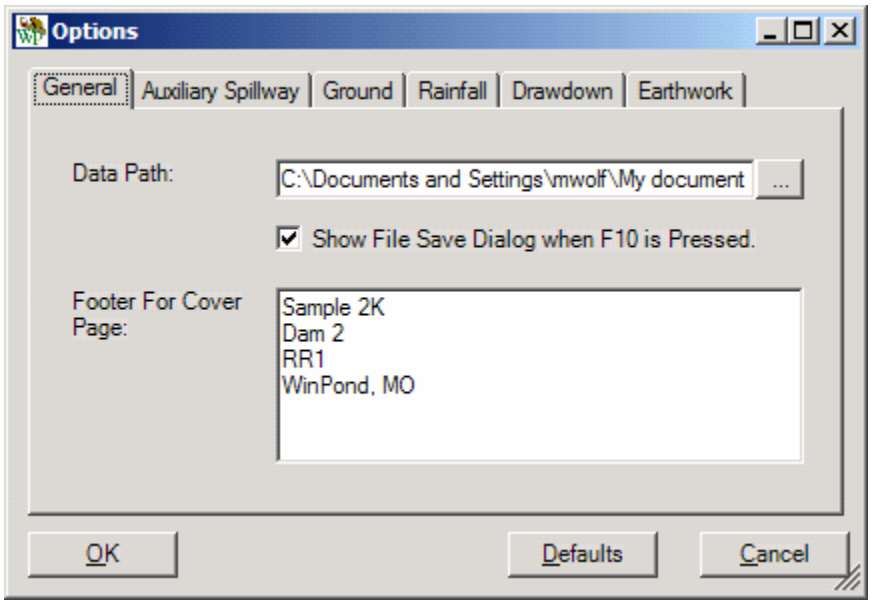
To change default values for creation of a DAM in WinPond, on the Windows toolbar at the top of the screen, click on Tools/Options. Many of the following defaults are used in making calculations related to the tabs listed below. These defaults used in calculations often are not displayed on any of the WinPond tabs.

The order of the options default tabs is in the same order as the defaults for the DOS Pond program.

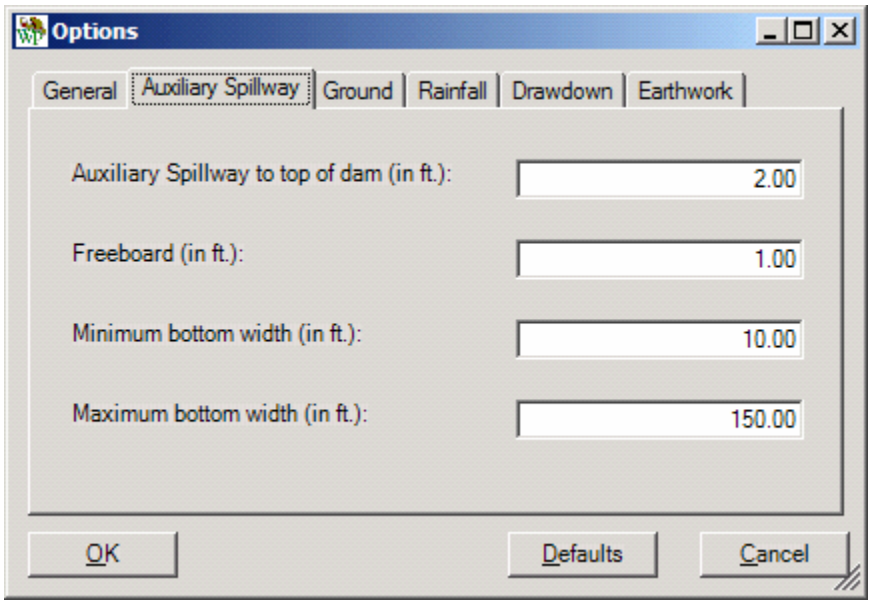
Restoration of all default values applies when the Default button is pressed; all changed values will be restored to previous default values. When only a single default value is to be restored to the previous default value, change only that default value back to the previous value without pressing the Default button, otherwise all changed values will be changed to the original default values when the Default button is pressed.

Options Default tabs displayed include:

	WinPond Tab Location
1. **General**	
Data Path	Path to **open** projects
Footer for Cover Page	**Project tab data - T1**

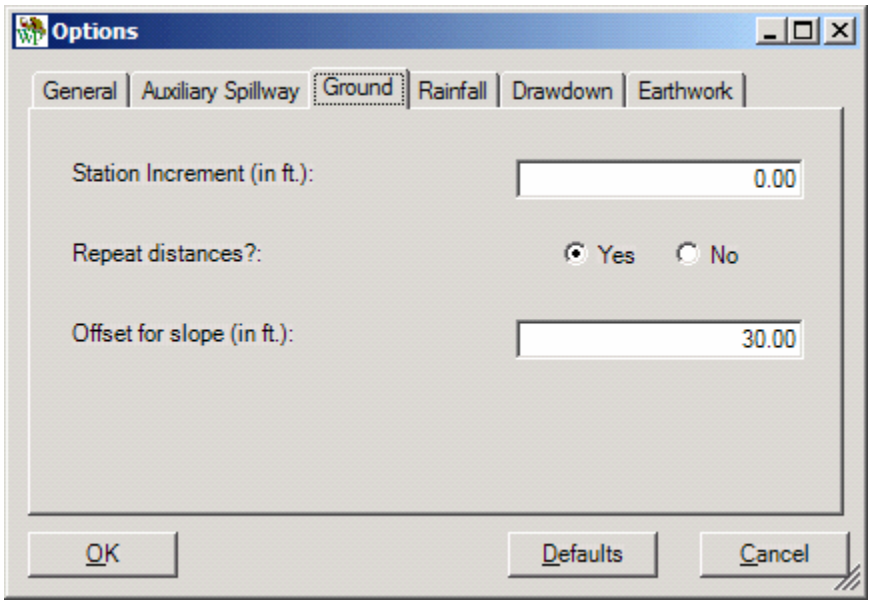


		Auxiliary Spillway tab - T8
2. **Auxiliary Spillway**		
	Auxiliary Spillway to top of dam (ft.)	2.00
	Freeboard (ft.)	1.00
	Minimum bottom width (ft.)	10.00
	Maximum bottom width (ft.)	150.00



3. **Ground** **Ground Profile/Cross Section tab - T11**

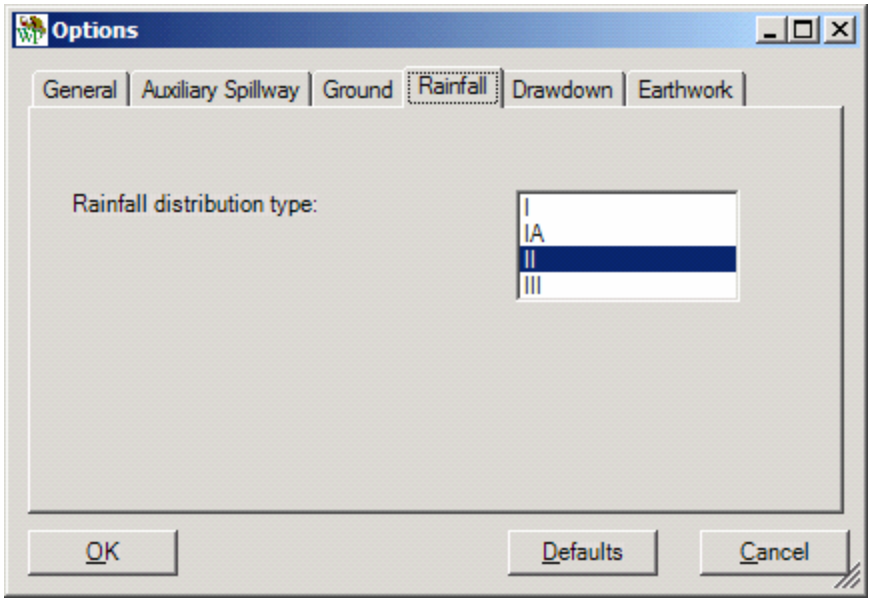
Station Increment (ft.)	0.00	
Repeat distances:?	**Yes**	x
	No	
Offset for slope (ft.)	30.00	



4. **Rainfall** **Hydrology tab - T3**

Rainfall distribution type:	I
	IA

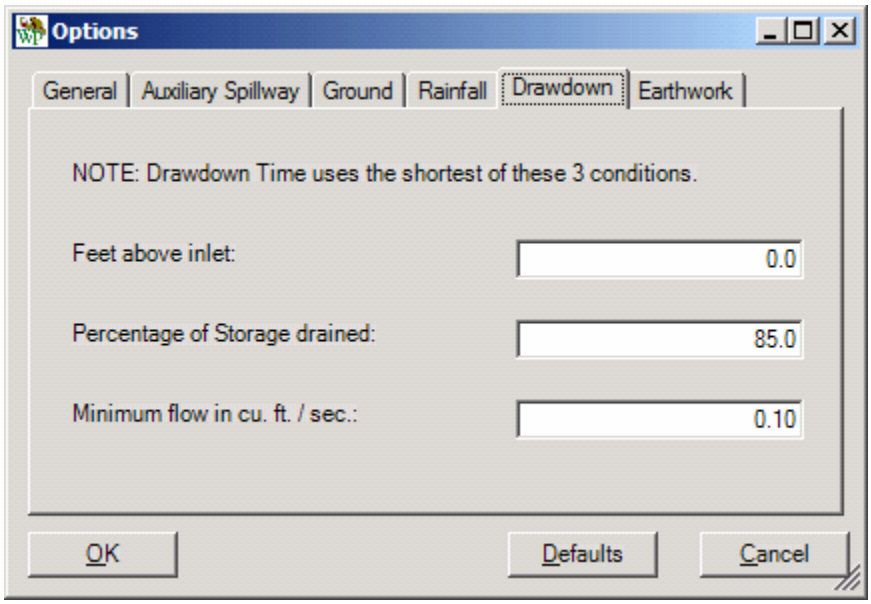
II x
III



5. **Drawdown** **Principal Routing tab - T7**

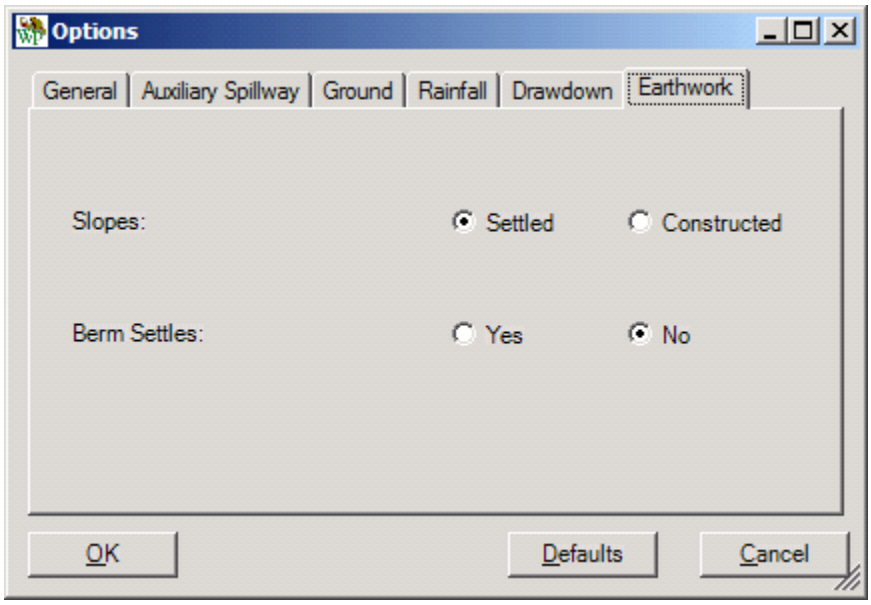
NOTE: Drawdown Time uses the shortest of these 3 conditions:

Feet above inlet	0.00
Percentage of Storage drained	85.0
Minimum flow in cu.ft./sec.	0.10



6. **Earthwork** **Embankment Cross Section tab - T12**

Slopes	**Settled**	x
	Constructed	
Berm Settles	Yes	
	No	x



Z Data Element Reference 02/08/2005

Data Elements, links and buttons on this list are located on the WinPond tab(s). The tabs
are displayed to the right of the data elements.

Two kinds of data elements are displayed on this screen:
Data elements located on WinPond tabs
Data elements located on Option tabs.

On this listing Principal Spillway (P.S.) and Auxiliary Spillway (A.S.) are abbreviated.

All data elements located on the following WinPond tabs are listed under each tab:

All data elements are referenced separately with Tab numbers

Data elements found on Option tabs are listed separately with Option tab numbers highlighted.

A

Above inlet sediment storage - T4
Acres (button) - T2
Actual bottom width (feet) - T9
Actual flow depth (Hp) (feet) - T9
Actual length, elbow to outlet (feet) - T5

Accum. Storage (ac.ft.) - T2
Add Template button - T12

Arid and Semiarid Rangelands [RCN3] - T3
AS to maximum water storage - T9
Auxiliary Elevation - T7, T8, T9, status bar T7, T8, T9, T10, T11

Auxiliary Routing - T9
Auxiliary Routing Actual Bottom width (feet) - T9
Auxiliary Routing Actual Flow depth (Hp) (feet) - T9
Auxiliary Routing Auxiliary Elevation - T9, status bar T9
Auxiliary Routing Drawdown time (days-hours) - T9
Auxiliary Routing Elevations Channel (downstream toe) - T9

Auxiliary Routing Elevations Overall height (feet) - T9
Auxiliary Routing Elevations Top of fill - T9
Auxiliary Routing Flow in auxiliary (cfs) - T9
Auxiliary Routing Maximum exit slope (%) - T9
Auxiliary Routing Minimum exit slope (%) - T9

Auxiliary Routing Storage (acre ft.) AS to Maximum water - T9
Auxiliary Routing Storage (acre ft.) Temporary (PA to AS) - T9
Auxiliary Routing Storage (acre ft.) Total at auxiliary elevation - T9
Auxiliary Routing Storage (acre ft.) Total at top of fill - T9
Auxiliary Routing Storage (acre ft.) Total at water elevation - T9

Auxiliary Routing Water elevation in auxiliary - T9

Auxiliary Spillway - T8
Auxiliary Spillway Auxiliary Elevation - T8, status bar T8
Auxiliary Spillway Bottom width (feet) - T13
Auxiliary Spillway Desired bottom width (feet) - T8
Auxiliary Spillway Desired flow depth (Hp) (feet) - T8
Auxilliary Spillway details report (R7) - T14

Auxiliary Spillway elevation - T13
Auxiliary Spillway Exit Channel Manning's n - T8
Auxiliary Spillway Exit Channel Permissible Velocity, fops - T8
Auxiliary Spillway Exit Channel Retardance - T8
Auxiliary Spillway Inlet Channel Length (feet) - T8 (calculated)

Auxiliary Spillway Inlet Channel Slope (%) - T8 (calculated)
Auxiliary Spillway Manning's n (2) - T8
Auxiliary Spillway Method - T8
Auxiliary Spillway Level section length (feet) - T8
Auxiliary Spillway Retardance (2) - T8

Auxiliary Spillway Side slope ratio - T8
Auxiliary Spillway Station - T13
Auxiliary Spillway to top of dam (feet)
Tools/Options/**Auxiliary Spillway - O2**

Hydrology Rainfall distribution type - T3
Hydrology Runoff (inches) (P.S. & A.S.) - T3
Hydrology Runoff Curve Number (RCN) - T3
Hydrology Time of concentration - T3

Hydrology 24-Hr Rain (in) - T3
Hydrology Watershed slope (%) - T3

I
I am making a template project (link) - T2
Inlet Channel Length (feet) - T8 (calculated)
Inlet Channel Slope (%) - T8 (calculated)
Inlet Elevation - T5, status bar - T5, T6, T7, T8, T9, T10, T11
Inlet extension (feet) [Horizontal distance] - T6

Inlet type - T5, T6
Int. Storage (ac.ft.) - T2

J
Job approval class report (R1) - T14

K

L
Landowner - T1
Length (linear feet) -T6
Level section length (feet) - T8

M
Manning's n - T6, T8
Maximum bottom width (feet) -
Tools/Options/**Auxiliary Spillway - O2**
Maximum exit slope (%) - T9
Method - T2, T8
Minimum bottom width (feet) -
Tools/Options/**Auxiliary Spillway - O2**

Minimum exit slope (%) - T9
Minimum flow in cu.ft./sec. - Tools/Options/**Drawdown - O5**
Minimum top of fill elevation - T7

N
New Pipe Length (link) - T10
Note: Inlet elevation required for sediment - T5
Notes/Description - T1

O
Office Name & Address for Project Report -
Tools/Options/**General - O1**

Offset for slope (feet) - Tools/Options/**Ground - O3**
Other Agricultural Lands RCN2 - T3
Overall height (feet) elevation - T9
Outlet Elevation - T5

Outlet extension (feet) [Horizontal distance] - T5

P
Peak flow (cfs) [PS & AS] - T3
Percent ground slope - T11
Percent Settlement - T12
Percentage of Storage drained - Tools/Options/**Drawdown - O5**
Permissable Velocity {fps) - T8

Pipe length used in floodrouting (linear feet) - T10
Pipe length (recalculated based on final top of fill elevation) (linear feet) - T10
Point Number _ of _ - T11
Pool Area (acres) - T2
Pool Area (sq.in) - T2

Pool Bottom Elevation - T5
Practice ID - T11

Principal Routing - T7
Principal Routing Auxiliary Elevation - T7, status bar T7
Principal Routing Conduit Diameter - T7, status bar T7
Principal Routing Conduit Height (inch) - T7
Principal Routing Conduit Type - T6, T7
Principal Routing Conduit Width (inch) - T7

Principal Routing Drawdown time (days-hours) - T7
Principal Routing Effective height (feet) - T7
Principal Routing Height x storage - T7
Principal Routing Minimum top of fill elevation - T7
Principal Routing Storage (acre feet) - T7

Principal Routing Storage (acre feet) Temporary - T7
Principal Routing Storage (acre feet) Total at auxiliary - T7
Principal Routing Storage (acre feet) Total at minimum top of fill - T7
Principal Routing Trial to use for routing auxiliary - T7

Principal Spillway - T5
Principal Spillway Actual length, elbow to outlet (feet) - T5
Principal Spillway Back slope (h:1) - T5
Principal Spillway Berm Elevation (back slope) - T5
Principal Spillway Berm Elevation (front slope) - T5
Principal Spillway Berm Width (feet) (back slope) - T5

Principal Spillway Berm Width (feet) (front slope) - T5

Principal Spillway C/L lowpoint Elevation - T5
Principal Spillway Channel Elevation - T5
Principal Spillway Conduit Invert. - T5 (drop)
Principal Spillway Elbow Elevation - T5

Principal Spillway Front slope (h:1) - T5
Principal Spillway Horizontal distance Outlet extension (feet) - T5
Principal Spillway Inlet Elevation - T5
Principal Spillway Inlet Type - T5
Principal Spillway Outlet Elevation - T5

Principal Spillway Pool bottom Elevation - T5
Principal Spillway Settlement (%) (F4 to toggle) - T5
Principal Spillway Tailwater Elevation - T5
Principal Spillway Top width (feet) - T5
Principal Spillway trials report (R6) - T14

Project - T1
Project County -T1
Project Date -T1
Project Designed By -T1
Project Field -T1
Project Landowner -T1

Project Notes/Description -T1
Project Project -T1
Project Range -T1
Project Section -T1
Project State -T1

Project Township -T1
Project Tract -T1

Q
Qe values from ASFILE method - T8

R
RCN determination report (R4) - T14
RCN1 - Cultivated Agricultural Lands - T3
RCN2 - Other Agricultural Lands - T3
RCN3 - Arid and Semiarid Rangelands - T3
RCN4 - Fully Developed Urban Areas (Veg.Estab) - T3

Rainfall (inches) [PS & AS] - T3
Rainfall distribution type - T3, Tools/Options/**Rainfall - O4**
Range - T1
Recalculated pipe length based on final top of fill elevation
(linear feet) - T10
Remove (link) - T12

Repeat distances? - Tools/Options/**Ground - O3**

Reports - T14
Reports - Auxiliary spillway details (R7) - T14
Reports - Conduit detail (R10) - T14
Reports - Construction checkout (R14) - T14
Reports - Create Report - T14
Reports - Deselect All - T14

Reports - Design elevations (R11) - T14
Reports - Earthwork volumes (R13) - T14
Reports - Elevation- storage input (R2) - T14
Reports - Embankment cross section data (R9) - T14
Reports - Ground data (R8) - T14

Reports - Hydrologic data - (R5) - T14
Reports - Job Approval Class (R1) - T14
Reports - Principal spillway trials (R6) - T14
Reports - RCN determination (R4) - T14
Reports - Select All - T14

Reports - Storage volumes (R3) - T14
Reports - Summary (R12) - T 14

Retardance (2) - T8

Riser - T6 (drop)
Riser Crest radius (inches) - T6
Riser Diameter (inches) - T6
Riser Length (inches) - T6
Riser Type - T6
Riser Weir length (inches) - T6

Riser Width (inches) - T6

Runoff (in) - T3
Runoff (inches) [PS & AS] - T3
Runoff Curve Number (RCN) - T3

S
Scale of the Map (Square inches) - T2
Section - T1

Sediment - T4
Sediment Storage - T4
Sediment Storage Required (acre feet) Below inlet - T4
Sediment Storage Required (acre feet) Above inlet - T4
Select All button - T14